

**From:**

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Energy Management Institute

**To,**

The Principal Advisor  
(Network, Spectrum & Licensing), TRAI

**Subject:** Comments on Consultation Paper on Approach towards Sustainable Telecommunications (Consultation Paper No: 02/2017)

Sir,

With reference to above consultation paper the point wise comments are as follows:

**Methodology for calculation of Carbon footprint**

**3.1:** Researchers at University of Petroleum and Energy Studies (UPES) Dehradun carried out work in the area of green telecom. As per the research outcome, in a telecom service level area, the carbon footprints of telecom networks can be calculated on the basis of following:-

- Number of units of electricity consumed by telecom equipment from grid power supply.
- Amount of fuel consumed in DG sets.

The accuracy of data is of utmost importance. The submitted data should be verified by third party audit.

**3.2: The third party audit of carbon foot print is required to be made mandatory.** The audited result is to be made available in public domain on half yearly basis. In absence of third party audit, the exercise of carbon foot print declaration will be futile like the existing reporting mechanism.

**3.3:** Researchers at University of Petroleum and Energy Studies (UPES) Dehradun have developed the formula for energy consumption and carbon emission of telecom networks based on international experiences and research findings.

**Carbon Footprints from Grid supply in a telecom service level area = Grid Electricity Consumption by telecom equipments of the telecom service level area (in MWh) \* Emission factor of the grid serving the location (MWh/ t CO<sub>2</sub> )**

If the emission factor of the grid is 'EF' (in tonnes of CO<sub>2</sub>e/MWh), consumption of power from the grid by the telecom network is 'A MWh' per year, then the carbon footprint per year due to grid power is calculated as:  $C_{GRIDPOWER} = (EF * A)$  tonnes of CO<sub>2</sub> per year

The carbon footprint of grid electricity is caused by the burning of fossil fuel at the generating station level, therefore average technical grid losses (transmission and distribution) for the year for the grid serving the telecom service level area are a significant contributor. For example transmission and distribution losses for Bihar and J&K are 42 and 46 percent.

**Therefore, Carbon Footprints of grid electricity per annum at generating station level = Yearly Carbon Footprints from Grid supply in a telecom service level area / (1-T&D losses of the grid serving the telecom area (expressed as fraction))**

**Carbon footprints from the Diesel generator = Diesel Consumed by the generators \* Emission Factor of diesel**

The record of diesel purchased by the telecom operator is available. It can be taken as diesel consumed by the telecom operator. Alternatively, based on running hours, generators capacity and average diesel consumption, diesel consumption can be determined.

The emission factor due to diesel consumption in diesel generator given by United States' Environmental Protection Agency (EPA 2005) is 0.0027 tCO<sub>2</sub> per liter.

**3.4:** The existing formula needs to be modified. The proposed detailed approach for calculation of carbon foot print of telecom network has been explained in 3.3

**3.5:** For calculation of carbon emission of telecom networks either average or CM (Combined Margin) that is a weighted average of the OM and BM (Weighted as 75:25) can be used as emission factor of grid. The emission factor depends on the location of the network and the grid. Researchers at UPES have suggested to include T&D losses while calculating the carbon emission from the grid.

**3.6: Carbon Footprints from Grid supply in a telecom service level area =Grid Electricity Consumption by telecom equipments of the telecom service level area (in MWh)\* Emission factor of the grid serving the location (MWh/ t CO<sub>2</sub>)**

If the emission factor of the grid is 'EF' (in tonnes of CO<sub>2</sub>e/MWh), consumption of power from the grid by the telecom network is 'A MWh' per year, then the carbon footprint per year due to grid power is calculated as:  $CGRIDPOWER = (EF * A)$  tonnes of CO<sub>2</sub> per year

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**Therefore, Carbon Footprints of grid electricity per annum at generating station level = Yearly Carbon Footprints from Grid supply in a telecom service level area/ (1-T&D losses of the grid serving the telecom area (expressed as fraction))**

**3.7:** The record of diesel purchased by the telecom operator is available. It can be taken as diesel consumed by the telecom operator. Alternatively, based on running hours, generators capacity and average diesel consumption, diesel consumption can be determined.

**Carbon footprints from the Diesel generator = Diesel Consumed by the generators \*Emission Factor of diesel**

The emission factor due to diesel consumption in diesel generator given by United States' Environmental Protection Agency (EPA 2005) is 0.0027 tCO<sub>2</sub> per liter.

**3.8:** Researchers at UPES Dehradun suggested accounting of carbon emission per subscriber basis as traffic based information is not available in India.

Considering International norms, OPTION 3: Averaging across total amount of traffic carried is to be used as it provides correct basis for comparison of carbon emission of telecom service providers.

**Energy efficiency in Telecom networks**

**3.9:** Research studies at University of Petroleum and Energy Studies (UPES) analysed the various renewable energy options for mobile telecom sites. It was observed that Solar Photovoltaic (SPV) and Hydrogen Fuel Cell are suitable options in Indian conditions. The payback period for both these technologies is around 3 years. GIS

mapping (Longitude and latitude mapping) of all BTS sites is required to select appropriate renewable energy options .

**3.10:** The electricity generated by a RET project (funded/ maintained by TSP) being used for community, should it be subtracted from overall carbon emission of a TSP. It will attract the service providers to invest in RET project.

**3.11:** The agency funding the RET project can claim carbon credits under CDM mechanism. The emission should not be subtracted if the RET project funded/ maintained by other agency.

**3.12:** There is no roadmap and mechanism to achieve the targets set in 2012. There are no new targets. Well defined targets need to be set for energy efficient telecom network in India.

**3.13:** Incentives should be extended to TSP carrying out energy conservation measures. For off grid mobile sites support can be provided as suggested by the DoT committee under Deen Dayal Upadhyaya Gram Jyoti Yojana (DDUGJY) and MNRE schemes.

**3.14:** Year wise target should be fixed to fulfill the objectives of NTP-2012 (National Telecom Policy) and sustainability in telecommunication sector. 100% of rural towers and 50% of urban towers should be hybrid powered by 2020. Necessary financial incentives should provided to telecom service providers to meet the annual targets.

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Thanks and Regards

Suniti Sharma