Greenpeace Response to the notice issued by TRAI

We have assessed the notice issued pre-draft based on the following central points:

1. Increasing carbon footprint- Contribution of telecom industry
2. Need for carbon credit policy for telecom sector
3. Methods / options to reduce the carbon foot print by ICT industry in India
4. Standardization of Green Telecom equipment and incentive for their adoption.
5. Framework for monitoring carbon emission and corrective action for telecom sector
6. Options for environment friendly alternate energy sources
7. Cost implication for adopting alternate energy source
8. Incentive schemes for promoting Alternate source of energy in telecom sector
9. Challenges and alternative to meet the futuristic energy demand for telecom sector
10. Management of e-waste and related issues

Increasing carbon footprint- Contribution of telecom industry

The Information and Communication (ICT) sector is one of the major contributors in global Green House Gases (GHG) emission. It is responsible for 2 % of global GHG emissions, on par with the Aviation sector1. On the basis of current projections, GHG emissions from the ICT sector is expected to double by 2020 i. e. from 830 MtCO2e presently to 1430 MtCO2e in 2020, inspite of innovations to accelerate energy efficiency - smart chargers for Mobile Phone, Energy star computers etc.

Within the ICT sector, the Telecommunication sector is responsible for half of these emissions, largely due to the massive telecom infrastructure expansion, in developing and fast emerging economies like India and China. The Telecommunication sector emits around 150 MtCO2e presently, which is expected to reach 350 MtCO2 by 2020. The primary reason for this is the proliferation of a large number of Mobile Network towers which runs on communication equipment that are based on old and obsolete technologies, and are highly inefficient in energy consumption.

The mobile towers for GSM services typically consume power in the range of 1 to 4 MW annually, while CDMA services are relatively better. However, only 50 -55 % of this energy is utilised for actual service delivery, while the rest is diverted in cooling of the Base Transmission Stations (BTS) and charging of UPS's.

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1 Smart 2020: enabling Low carbon economy in information age; The Climate Group and Global e-sustainability Initiative: 2008

India is second largest GHG emitter in the ICT industry globally, after China, which in turn has propelled huge expansion in telecommunication infrastructure within a narrow model – fixed lines, broadband lines and mobile towers, leading to the huge consumption of electricity.

Direct to Home (DTH) services offered by various market players has also led to increased consumption, as these services are also transmitted through same communication networks, while adding substantial load, resulting in significantly greater consumption of electricity.

With the introduction of the 3-G spectrum, new and faster Data services will be started by market players. Data transmission needs more bandwidth which in turns needs more electricity consumption, resulting in further consumption and thereby increased GHG emissions from this sector.

Estimates provided by the Ministry of New and Renewable Source of Energy (MNRE) suggest that the Indian telecommunication sector consumes 2 billion litres of diesel annually to fuel its 3 Lakh and rapidly increasing mobile network towers, in the process contributing to 2% of India's GHG emissions annually,(Sources:COAI). This places the Indian telecommunication sector on par with the global estimates, and is a serious cause of concern.

Need for carbon credit policy for telecom sector

Carbon credit deals with shifting the mitigation action from source to another location which could provide cheaper mitigation options. In countries like India, which have already taken up quite a lot of Clean Development Mechanism (CDM) Projects, the telecom sector too would, presumably be looking at CDM as an opportunity.

Prior to initiating or enabling any carbon credit policy, a comprehensive assessment within the Indian Telecom sector is critical to qualify the potential for mitigation within the sector, segregated further as high and low cost mitigations. This is vital to understand and inform any decision, on whether the evolution of a carbon credit policy for the Indian telecom sector, would actually hamper domestic mitigation for the sector.

The high cost mitigation could be channelized towards carbon trading, wherein foreign companies would be required to come and do mitigation, which would counted as efforts undertaken by the Foreign company. If there is a blanket support for offsets, the possibility of all low cost action being routed through offsets is high, which would translate to Indian companies not taking any action of their own.

So, prior to the process of exploring a carbon credit policy, the framework needs to be structured to ensure that Indian Companies are demonstrably taking real action, with offsetting not hampering Indian company's potential / inclination to mitigate.

Methods / options to reduce the carbon foot print by ICT industry in India

Within the Indian Telecom sector, carbon emissions results at two levels

1. Direct emissions - through the captive power generation of diesel generator and
2. Indirect emissions - through purchase of electricity from the Centralized Power grid and procurement and the use of IT and communication equipment.

Diesel generators are used either as a back-up to operate and run the Mobile Network towers, during the absence of electricity from the power grid or alternatively, are completely utilised to operate and run mobile network towers in areas where the grid connectivity is not available.

As mentioned earlier, besides the huge consumption of diesel, around 2 Billion litres annually (Sources:Ministry of new and renewable energy), resulting in significantly high carbon emissions, as well as accumulating a huge enterprise cost, as part of the process of providing their services.

In this regard, to twin the need to reduce emissions and to save on enterprise cost, **Mobile network towers should be powered by renewable energy like Bio-mass, Photo-voltaic (PV) solar power etc.** A hybrid system (in combination with conventional Grid power) can be pursued in areas with Grid connectivity. In off-grid areas, with particular emphasis on rural areas, Renewable energy powered Mobile Network tower should be seriously explored. This will greatly reduce the dependence on diesel for running such towers while accruing significant enterprise cost savings over a period of time.

The consumption of electricity through the use of communication equipment like Radios, Transmitters and IT equipment like Computers etc. account for indirect emissions in mobile network towers. Reducing such emissions would mandate that the Indian Telecom sector in general, with particular reference to network towers, should procure and use only energy star rated equipments, with high levels of associated energy efficiency. Simultaneously, the utilisation of old, energy guzzling equipments should be phased out in an accelerated manner. This will significantly contribute towards reduced consumption and thereby emissions, as well as result in savings.

Indirect emissions from purchased electricity could be reduced if telecom companies purchase additional Renewable energy from generators to power their service stations. To enable and ensure that the purchasing of renewable energy by individual operators is feasible, 'Open Access' of electricity purchased should be permitted, so that companies or operators can procure Renewable Electricity from any generator irrespective of state boundaries. Simultaneously, renewable energy certificates (REC) should be allowed at the level of individual companies or operators, from its current form to a state level. This will help in fostering the demand for Renewable energy, as it provides an incentive to companies to use their RECs to offset their carbon emissions.

The current subsidies to telecom companies on commercial tariff of conventional power should be withdrawn. Such subsidies or concessions should be given to those companies which use renewable energy to power their network towers and on the basis of the number of network towers powered by telecom operators.

Standardization of Green Telecom equipment and incentive for their adoption

Similar to consumer electronic products like Refrigerators and Air-conditioners, stringent energy efficiency standards should be adopted for Telecom equipment. The standard should be in line with the US EPA energy star ratings. Such a standard should be made mandatory from the outset, with the provision of a reasonable period of time given to the operators to phase out inefficient equipments / products.

Framework for monitoring carbon emission and corrective action for telecom sector

As a first step, all Telecommunication service operators should be asked to disclose their carbon emission under the Green House Gases (GHG) protocol of the World Resource Institutes (WRI).(http://www.ghgprotocol.org/,http://www.wristore.com , http://www.wbcsd.org) This framework is widely used in Industrial sector for carbon emission accounting. As per the framework, the carbon emission of telecom companies should cover all three scopes of emission as follows

a. Scope 1: Direct Emissions
   - Stationary Combustion (from the production of electricity. Steam, heat) eg. Diesel generator or captive power plant
   - Mobile consumption (transportation of raw materials / equipment for use / waste disposal)

- Fugitive emission (mainly from HFC from refrigeration / cooling / chilling plants)

b. Scope 2 : Indirect Emissions
   - Stationary combustion (consumption of purchased electricity, heat or steam)

c. Scope 3 : Indirect Emissions
   - Stationary combustion (production of purchased materials)
   - Process emissions (use of purchased materials)
   - Mobile combustion (transportation of raw materials/ equipments/ waste, employee business travel, employee commuting)

The accounting of emissions as per scope 1 and 2 should be mandatory for all companies. Simultaneously, to facilitate better accounting and institutionalizing "targets" within companies, in spirit and practice, it is important that companies should also undertake the Scope 3 accounting. The setting of boundaries for emission accounting should be on the basis of the GHG protocol of the WRI framework (http://www.ghgprotocol.org/,http://www.wristore.com , http://www.wbcsd.org)

The second step for monitoring emissions is the verification and assurance of "carbon emission figures" by a third party i.e. an accredited Energy accounting agency under United Nations Framework Convention on Climate Change (UNFCCC) (http://unfccc.int/2860.php). This will help in accurately ascertaining carbon emissions of the company, and assist in the process of identifying areas where the company can continue to reduce its carbon emissions.

The third step, on the basis of inputs given by third party verifiers, should result in companies setting targets for carbon emission reductions, which will be delivered within a specified time frame. The identification of the base year would assume importance in this context and should be the year when the company has the it's carbon emissions at the highest level or roll over across a few years, given that company's emission will grow exponentially due to future acquisitions. However, from a monitoring point of view, keeping track of emissions in a "rolling base year model" is difficult, as the base year rolls forward and will be compared with the previous year till such point of time, when a particular year peaks at the highest in emissions. Any such commitment would be meaningful, if an only if, companies commit to fix targets for reduction by at-least 20% from the base year, applicable for its entire operation.

For transparency and effective monitoring, the carbon emission figures and corresponding reductions against committed targets should be reported regularly to the compliance authority, as well as disclosed in the public domain through company's Sustainability reporting initiatives and other modules.

Options for environment friendly alternate energy sources

The following modes of environmentally friendly alternate sources of energy offer viable alternatives.

1. **Solar:** Stand alone systems and / or grid tied systems
   *Solar energy for towers: India with one of the largest markets for cell-phones has proposed plans for cell-phone towers that are powered by solar energy. China mobile, the leading Chinese telecommunication operator, has already set up the world's biggest solar-energy-powered base station in China (*http://www.alternative-energy-news.info/cell-phone-chargers-to-go-green/*)*

2. **Wind:** Small scale turbines in places where there is a high wind regime.

3. **Bio energy:** Biomass gasifiers/ Biogas plants

4. **Hybrid Systems:** Wind and solar hybrids, solar and biomass hybrid.

5. **Small Hydro Systems** depending on geographical locations.

Cost implication for adopting alternate energy source

While the cost of alternate energy from renewable sources are on the higher side currently, when compared with diesel gen-sets, the per unit cost (KWH) is comparably quite low.

For instance, while the average cost of electricity from diesel generators ranges from Rs. 20 to Rs. 28 per KWH, renewable sources like Solar have an average cost ranging from Rs. 15 to Rs. 18 per KWH, while Wind ranges from Rs. 4.5 to Rs. 5.5 per KWH2.

Over a period of time, and on a long-term basis, there is empirical evidence to demonstrate that the cost of alternate sources of energy (renewable) is comparable to the cost of conventional energy, especially as the average cost of renewable energy would decrease as production capacities would increase over a period of time [*Reference reports, E[R] 2010 Greenpeace, (www.energyblueprint.info)and World Energy Outlook (http://www.worldenergyoutlook.org/),IEA (http://www.iea.org/)]*

Incentive schemes for promoting Alternate source of energy in telecom sector

Some of the areas and schemes through which alternate sources of energy could be popularized in the Indian telecom sector would include

1. Subsidy on tariff/Equipments for the generation of alternate energy.
2. Feed in Tariff Mechanism/ Generation based incentives.
3. Import duty exemption on import of equipment for RE generation

Challenges and alternative to meet the futuristic energy demand for telecom sector

The Indian Telecom arena is a growing sector which is expected to grow exponentially in the time to come. The current levels of energy consumption and resultant carbon emissions are a serious cause of concern, for the sector and India at large. With the introduction of 3-G and potential introduction of 4-G in the near future, the demand for energy within the telecom sector will grow exponentially.

In their ***Smart 2020*** report, the Climate Group and the Global E-Sustainability Initiative have outlined that by 2020, the carbon emissions from the global telecom sector will double from the base line of 2002, inspite of existing and expected technological innovations like Smart charges and efficient radio & transmission system.

In India, the situation will be far more serious considering that the telecom sector is anticipated to grow exponentially. With the introduction of the 3-G technology which enables high-speed data transfer, the energy demands of mobile network towers will increase by two to three folds atleast because data transfer would consume more energy. The introduction of 4-G, with a speed transfer rate 10 times higher than the 3-G, will further substantially increase the energy consumption patterns of the Telecom sector. There will also be a significant spurt in the proliferation of mobile towers. Currently, there are around 3, 00,000 Mobile towers in the country.

To increase rural penetration from the existing 26 % to at-least, 50-55 % over the next five years, an additional minimum of 300,000 towers would be required (Industry estimate).This will place a significant burden on an already stressed energy scenario in India. In all likelihood, most of the new mobile towers will have partial or no access grid electricity, which would imply their reliance on diesel, partially or completely.

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2 All figures from the Central Electricity Regulatory Commission, Government of India. Refer to www.cercind.gov.in

Looking at these two challenges one clear alternative for telecom sector is to shift to renewable energy in a phased manner over a specific time-frame. As outlined earlier, the telecom sector should move toward a model which enables the increased purchase or installation of captive renewable energy plants to meet their growing demand of electricity. If this critical step is not taken by the Telecom sector, with the required support from TRAI and the Government of India, in the form of fiscal and governance mechanisms, besides the climate change concern, even from an enterprise costing perspective, the patterns of energy consumption and usage on the current premise, will not be sustainable.

Management of e-waste and related issues

All telecommunication operators should return their discarded electronic and electrical equipment including IT and communication equipment to the original manufacturer or alternatively to only authorized E-waste recyclers. The companies should ensure that their e-waste are recycled and treated in an environmentally sound manner, consistent with the provisions laid out by the recently notified Draft E-Waste (Management and Handling) Rule, issued by the Ministry of Environment and Forests3. This would include ensuring that there will be no resultant environmental or public health impacts as a result of recycling or treatment of these e-wastes.

Further, appropriate incentives need to be created by the TRAI and the Government of India to ensure that all Telecom purchase only those electronic and electrical equipment which are Restriction of Hazardous Substance (RoHS) compliant, under either the European Union (EU) directive (provide reference and link to the WEEE directive) or the Indian E-waste Rule4, whichever standard is higher.

Moreover, all telecommunication equipment manufacturers who are in the business of selling equipment in India should rigorously adopt the principle of Extended Producer Responsibility (EPR) as laid out by the Indian E-waste Rule5 and provide take-back and recycling service to all its consumers including telecommunication operators. The take-back and recycling services should be ensured for both business and Individual consumers.

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3 Refer to http://moef.nic.in/downloads/public-information/Draft%20E-waste-Rules%2030.3.10.pdf

4 Refer to http://moef.nic.in/downloads/public-information/Draft%20E-waste-Rules%2030.3.10.pdf

5 Refer to http://moef.nic.in/downloads/public-information/Draft%20E-waste-Rules%2030.3.10.pdf