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Mr Lav Gupta,
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Telecom Regulatory Authority of India (TRAI)
Mahanagar Door Sanchar Bhawan
Jawaharlal Nehru Marg
New Delhi - 110002

Sub: **Response to TRAI w.r.t consultation on “Green Telecom”**

Dear Sir,

This has reference to the TRAI Consultation Paper No. 3/2011 dated February 3, 2011 seeking the stakeholders' comments for Green Telecom.

At the outset, **Viom** wishes to thank TRAI for the initiative taken by them for seeking comments for coming out with a consultation paper on a subject which is in the enlightened self- interest of the telecom infrastructure industry that its products and services are, and are perceived as useful and safe. We are therefore keen to work with the TRAI and other agencies to maximise the benefits from our infrastructure and minimise any risks.

Our detailed response is enclosed. If there is any other contribution that you feel we can make in this direction, please do let us know.

Thanking you,

Very truly yours
for **Viom Networks Limited**

Naresh Ajwani
Chief -Regulatory & Corporate Affairs

Introduction

There are legitimate concerns about the damage to the environment accompanying many aspects of industrial growth. Like other industries, IT and telecom too involve several steps and activities that result in greenhouse emissions. Since growth is an important instrument of poverty reduction and greenhouse emissions an emerging threat, it is important that goals of increased growth are carefully reconciled with the need to bring down greenhouse emissions drastically. We support authority in its efforts to promote an eco friendly telecom sector.

There are frequent disputes over data about scale and source of emissions and the nature of interventions required to reduce them. There are also practical difficulties in compiling data in an industry like ours where change and innovation are the order of the day. Technologies are constantly in a state of evolution. Operators and service providers chase efficiencies to remain competitive. Therefore, while the concerns about carbon footprint are real, the data can often be contentious and misleading.

However, the importance of telecom and the need to connect those who are unconnected cannot be lost sight of in our legitimate concern over the collateral damage to the environment. We cannot throw the baby with the bath water. Any measures that hurt economics of connecting the unconnected, in villages and remote areas, will hurt those who need infrastructure most. Indeed the cost of connecting them is already high.

Green solutions are not cheap. Any attempt to pass on the cost of employing them exclusively to service providers will delay services to the most vulnerable. The larger goal of increased connectivity can be met only if costs are shared to ensure that the infrastructure business remains viable.

Energy demands of the infrastructure sector, present the most serious challenge in moving to a green telecommunications sector. However, it is important to recognise that much of the increased pollution comes from diesel that operators are forced to use because conventional grid power is barely available for more than 25% of the time.

Economists recognise market failure in environment protection. There is need for a society wide effort to make green solutions viable. Governments across the world contribute to the goal of reduced emissions by carefully designed subsidies. An incentive-based scheme is the most workable solution to this challenging problem. Cost reimbursement for those who deploy green solutions is an important first step.

However, it is important not to distort markets by subsidies prone to abuse or likely to give any particular player or technology an unfair advantage over its competitors. Subsidies must be technology and service neutral.

We must recognise that cost is the major challenge in deploying viable green solutions. Fortunately these additional costs can be met substantially through public funding or universal service subsidies.

Our specific responses to some questions are given below:

Carbon Footprint

3.1 How should the carbon footprint of Indian telecom industry be estimated?

Each type of fuel (e.g. diesel, petrol, electricity from the grid) contributes a corresponding amount of CO₂. India must use accepted methods of estimating carbon footprint based on amount of carbon dioxide emissions.

3.2 What is your estimate of the carbon foot print of the fixed, mobile and broadband networks?

This is a complex question the answer to which would depend on several variables depended on use of specific technologies and other parameters. Referring any International view **needs to be vetted in Indian conditions to arrive at any estimation. However, we accept TRAI estimates as a good starting point.**

3.3 In case of mobile what would be the individual footprints of the radio access network and the core network? How are these likely to change with 3G and 4G technologies?

See answer to 3.2

Carbon Credit Policy

3.4 How should the carbon credit policy for Indian telecom sector be evolved? What should be the timeframe for implementing such a policy?

It is critical that India's policy is in line with world best practices while it attempts to meet national objectives. India must consciously seek to marry the important objective of delivering voice and data connectivity with a need to bring down Greenhouse emissions. Any attempt to treat the two objectives in isolation can hurt long term interests in growth and a clean environment. The policy adopted must be simple, coherent and targeted. Any attempt to strike an unorthodox approach can make enforcement difficult and costly. The goal must be to address the ecosystem of telecom in India rather than focus on isolated activities within the system. The framework used must be in line with international best practices. It is vital that it is based on quality data

and analysis. The approach must be incentive based wherein companies deploying green technologies or processes are rewarded.

3.5 What should be the framework for the carbon credit policy?

It is premature to implement a carbon credit policy for telecom in India. This should be attempted only after due study and in a phased manner after running some pilots. A hurried approach could add huge costs for companies seeking to expand infrastructure against great odds. Any process that increases the time or cost of creating infrastructure will especially hurt the poor who suffer most because of lack of access to infrastructure.

3.6 What should be the metric to ensure success of the carbon credit policy in reducing the carbon footprint of the telecom industry?

CO2 emissions are a widely used metric. We should be guided by international best practices aligned to **Indian environment**.

Availability of Power

3.7 What proportion of tower infrastructure is in rural areas? Please comment on the grid/electricity board power availability to these towers.

Close to 60% of telecom infrastructure is in rural areas. Virtually no part of India has access to grid 24x7. Almost 40% of the country has no access to grid power. Towers rely very extensively on diesel for power.

3.8 To what extent can active sharing reduce the carbon footprint and operational expenses?

Active sharing can go a long way to reduce dependence on diesel- Active infrastructure sharing would save an additional 40% on energy consumption which is good for environmental reasons.

Domestic Efforts for Reduction of Carbon Footprint

3.9 What proportion of non-grid power supply to towers in rural areas can be anticipated to be through renewable sources of energy in India in the next 5 years?

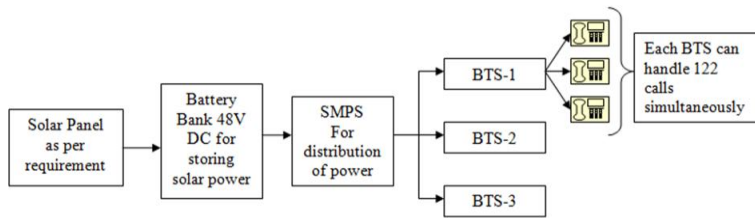
This depends on several parameters including cost deploying renewable energy options. These costs are currently commercially unviable. The scenario at the best can be articulated as under:

- Grid Power is Erratic; Not an Option for 24x7 Services,
- DG -An Expensive and Environmentally Unacceptable,
- Renewable Energy Solutions are environment friendly but 40% more expensive compared to DG battery solutions (Negative IRR Over the 10-year Life Span of the Solar Panel) &
- Currently, Solar-DG-Battery Hybrid Solutions are the best compromise (Solar Panels Cater to Telecom Load Only for 4 – 5 Hours/Day while DG is used to Charge the Battery).

However through carefully administered subsidies (from the USOF) the cost of deploying renewable energy solutions can be brought down substantially.

3.10 How much saving accrues per tower if supply is through a renewable source instead of diesel for towers that do not get grid power for 12 hours or more?

Please refer 3.9 and for renewable source on standalone situation, the IRR as mentioned below is self explanatory:



EIRR Calculation (DG Battery v/s Solar Battery Combination)

Year	Reason for Capex	DG Battery Combination			Solar Battery Combination			Net Cost
		Capital Cost	O&M cost	Total cost	Capital Cost	O&M cost	Total cost	
1	1st Install	712,817	552,636	1,265,453	10,160,032	1,016,003	11,176,035	9,910,582
2			580,268	580,268			-	(580,268)
3	BB Replace	523,310	609,281	1,132,591	1,040,196		1,040,196	(92,396)
4			639,745	639,745			-	(639,745)
5	BB Replace	576,949	671,733	1,248,682	1,146,816		1,146,816	(101,866)
6			705,319	705,319			-	(705,319)
7	BB Replace	636,087	740,585	1,376,672	1,264,364		1,264,364	(112,308)
8			777,614	777,614			-	(777,614)
9	BB Replace	701,286	816,495	1,517,781	1,393,961		1,393,961	(123,819)
10			857,320	857,320			-	(857,320)
							IRR =	-14%

3.11 How can migration to renewable sources be expedited?

The chief barrier to deploying alternative energy solutions is their cost. A well designed subsidy scheme would be the most important first step. Charging lower rates of interest for funds invested in creating green telecom infrastructure in the rural areas would also motivate Telecom Infrastructure Providers.

Methods for Reducing Carbon Footprint

Metrics for Certification of Product and Services

3.13 What should be the metric for certifying a product green?

While CO₂ emission is a natural choice, it is important to be guided by internationally best practices taking into account work being done by regulators and R&D agencies that suits Indian environment.

3.14 Who should be the metric for certifying a network or service as green?

If the reference is to who should certify networks for their 'green-ness', it is important that such an agency be independent, competent and with a mandate to track and be fully conversant with world best practices as well as challenges of Indian environment.

Infrastructure Sharing

3.18 What is the potential of infrastructure sharing in reduction of energy consumption?

Infrastructure sharing can substantially lower costs of network deployment. This does reduce energy costs including those for creating, setting up infrastructure. However, given that cost is the chief barrier to use of renewable energy, the cost savings due to infrastructure saving can significantly improve the economics of deploying renewable energy solutions.

Standardisation of Equipment

3.23 Who should handle the testing and certification of green equipment and networks?

Self-certification is the most practical approach in this case.

Monitoring and Reporting

3.25 What should be the rating standards for measuring the energy efficiency in telecom sector?

India should strictly adhere to international norms.

3.26 Please give suggestions on feasibility of having energy audit in the telecom sector on the lines of energy audit of buildings.

This is a complex exercise which must be attempted based on the cost-benefit considerations.

3.27 What should the monitoring mechanism for implementation of green telecom?

A detailed monitoring is unrealistic for a network of India's size. Self regulation is the most practical solution. The regulator could consider periodic sample surveys to determine the general levels of compliance.

3.28 Who should be the monitoring agency?

Given the nature of the task, independence and competence of the monitoring agency is the key issue. A telecom specific agency should be created.

3.29 What type of reports can be mandated and what should be the frequency of such reports?

To achieve its objectives at minimum costs and in reasonable time, the reports could include specific action taken to reduce carbon footprints in a conveniently formatted template available online.

Incentives for Green Telecom

3.30 What financial and non-financial incentives can be useful in supporting the manufacturers and service providers in reducing the carbon footprint?

The best incentives are financial. Those deploying green equipment/technologies must receive 100% refunds from the USOF. Manufacturers must receive concessions and/or waiver of duties payable by them.

Promoting R&D for Green Telecom

3.32 How can domestic R&D and IPR generation be promoted?

Adequate funding is the key along with autonomy in hiring qualified people. Help with patenting, interfacing with industry, product commercialisation etc are other areas where assistance would be critical.

CSR and Community Service

3.33 Would it be a good idea for TRAI to evolve a best practices document through a process of consultation with the stakeholders?

This would be desirable. However its usefulness would depend critically on how well it factors in the challenges faced by stakeholders in the telecom sector.