

Enabling the Net Zero Transition – Harnessing ICT solutions to reduce GHG emissions

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- While the Paris Agreement strives to respond to adverse effects of climate change by aiming to keep global temperature rise in the current century below 1.5 to 2 degrees above the pre-industrial levels, there is a very real threat as believed by many scientists that it is a real possibility of temperature rise by 3 degrees Celsius by the end of this century.
- There's an urgent need to limit rising temperatures by committing to stick to a 1.5 degree Celsius limit by all sectors to reach net zero GHG emissions globally by 2050, which implies quick corrective action is to be taken by all concerned.
- To achieve net zero we have to maintain a balance between emissions and removal of the quantity of greenhouse gas (GHG) that's produced, we need a two-way approach to balance both.
- ICT sector is responsible for only 2 percent of greenhouse gas emissions globally but this is a rapidly growing sector with technology growing in quantum and reach, it is expected that by the year 2040, the emissions from the ICT sector would increase to 14 percent. This is indeed thought-provoking as the world is striving to achieve net zero emissions by the year 2050.

ICTs as facilitators

On the other hand, ICTs are also extremely effective tools for carbon dioxide emission reduction and energy-saving solutions worldwide by developing smart cities, transportation systems solutions, industrial processes by utilizing ICTs, coming up with energy-efficient building systems, transportation, agriculture, etc. which have a direct positive effect on the environment.

- A rough calculation tells that digital technologies have the capability to reduce emissions by almost 20% by the year 2050 in the highest GHG emitting sectors like transportation, energy, materials.
- By adoption of digital technologies and ICT solutions, these sectors can reduce total emissions by almost 4 to 10% by the year 2030.
- Also ICTs are extremely valuable in achieving sustainable development Goals through providing e-health, agriculture solutions, financial inclusion and various other energy solutions.
- We can see not only ICT industry can reduce its own emissions but also help achieving other SDG goals, this is extremely valuable in achieving net zero goals for most of the sectors..
- Telecom sector has high energy requirements and this further enhances cost of operations if conventional energy sources are utilized, these deteriorate the environment further through emissions and rise in heat h.

- In this scenario the usage of green technology like usage of renewable energy sources for energy requirements of ICT sector will help reduction of emissions and also in fulfilling the energy requirement of rural and far flung remote areas where in current scenario power availability is very poor, specifically in emerging economies.
- This would also help in cost reduction as renewable energy sources require lesser operating costs in comparison with conventional sources.
- It is heartening to know that world is taking net zero emissions seriously with Europe coming up with regulations about universal single charger which is compatible to all mobile phones and tablets, it would be a small step but a significant toward reduction of E - waste for the environment as consumers can use USB Type-C port for all kind of portable devices , this is a small but thoughtful effort and will help the world secure precious natural resources as well.
- Also countries getting serious about E Waste polices and Extended Producer Responsibility(EPR) is another step towards responsible consumption

Challenges faced by Telecom / ICT industry

In spite of good intentions by the sector to make business greener , many challenges are faced by Telecom industry.

- Ever-increasing pressure to keep the systems running
- Availability of renewable energy grids with shared costs.
- Simultaneous solutions to reduce emissions without reducing revenue targets.
- Finding solutions to cut emissions both directly in the ICT industry as well as indirectly cut through innovation in other sectors.
- Nonavailability of common plan and guidelines for use of ICTs in GHG reduction.
- Teams working in silos towards achieving net zero targets within and outside individual enterprises.
- For example to achieve sustainability all the wings of a business have to come together, instead of a single sustainability manager.
- Ad hoc arrangements to achieve targets.
- Innovation is the key where the focus currently is on technology development not on SDGs.

India towards net zero

India's National telecom policy 2012 and draft National Telecom policy 2018, puts emphases on green technology, and a vision of sustainable development goals, a combination of technology growth along with sustainable development growth is the primary focus of the government of India to attain the goals of Paris agreement by the year 2070.

During COP-27 (conf of the parties), India has committed to reducing its emissions and achieving net zero emissions by the year 2070.

India's commitment is extremely realistic and by announcing a long-term strategy, India is now amongst those top 57 countries that have clear-cut specific targets towards achieving Paris Agreement targets.

India is committed to increasing the usage of non-renewable energy and by the year 2030, almost 50 percent of energy usage is targeted through non-renewable energy.

Most of the ICT companies in India are putting efforts to achieve a significant reduction in their GHG emissions and contribute towards decarbonizing efforts.

Both TRAI (Telecom Regulatory Authority of India), which is the Indian regulator, and ITU have recommended Various solutions Universal power adapters and charger solutions for mobile terminals and other hand-held devices, Along with External universal power adapter solutions for stationary ICTs, Green battery solutions for mobile and other hand-held ICT devices, and procedures for recycling rare metals in ICT goods and Best practices for green data centers along with Guidelines for developing sustainable e-waste.

TRAI has brought up Consultation Paper On Approach towards Sustainable Telecommunications, Network, Spectrum, and Licensing stating and agreeing that the ICT industry has to work towards attaining sustainable development goals by reducing the usage of fossil fuels in the ICT industry, as the main energy resource and immediate action is required to mitigate climate change.

TRAI's Consultation paper on Green Telecommunications on technology development touches upon the use of alternate renewable power resources for powering up telecom towers in rural and remote areas to find solutions to an unpredictable power situations, especially in rural and remote areas.

Initiatives by Telecom Industry toward net zero emissions

With emerging technologies like AI, IoT, and 5 G, it is expected that network energy consumption across the globe will increase tremendously, almost by 150 to 170 percent. Many initiatives have been taken by Indian telecom players which include the “Green Power program” which explores the use of a wide range of technologies like biodiesel, fuel cells, Pico-hydro, wind, and photo voltaic panels to fulfill the energy requirement for the telecom sector with less emission of carbon.

1) Aircel: NDTV Toyota Greenies Eco Award was awarded to it under the category of Best Green Company. It has adopted green initiatives which are designed and implemented by Wipro Eco energy, which was the clean energy division of Wipro.

2) Vodafone

It adopted an energy-efficient approach for cooling base stations and to reduce fuel consumption, alternating diesel battery hybrid mode. To create different sustainable models for recycling waste and conserving resources in offices, it has started a campaign named “Resolve”.

Initiatives by Telecom Industry toward net zero emissions

Free cooling boxes: Vodafone has successfully implemented a Smart air conditioning method to shut down the air conditioning when the outside air temperature is lower than 26 degrees C.

Airtel has employed the concept of “Green shelters” leading to major savings in energy consumption by its network in India.

BSNL has taken up various pilot projects of 10 kw solar plants at 14 sites and wind power projects at 6 USO-funded (Universal service obligation fund) sites in the states of Rajasthan, Gujarat, Tamil Nadu, and Maharashtra, these projects are facilitating cost reduction, energy efficiency, and reduction in carbon emissions. There is a great scope and technical and financial viability to replicate these hybrid systems for mobile BTS towers on a massive scale.

India is also working towards producing the world’s most affordable green energy within a decade, Reliance industry has partnered with various eminent global partners like USA-based Ambri, Netherland-based Lithium Werks, and UK-based Faradion , besides partnering with Denmark's Stiesdal A/S and US s based Chart industries to set supply chains of commercial green hydrogen .

Promotion of domestic production, self-reliance innovation and make in India,to be self reliant.

Way forward

- Encouraging the use of lithium batteries in virtual power plants
- Development of green shelters in the vicinity of data centers.
- Automated electricity systems with the automatic cut when not in use Or a particular temperature is achieved.
- Switching to renewable in all the sites
- Reduce, refurbish, and recycle
- Waste disposal in eco-Friendly manner
- Designing green buildings focusing on greener structures.
- Monetary Fines on carbon footprint.
- Energy efficiency and sustainability of products at the manufacturing stage.
- Future networks
- EVMs towards a cleaner greener transportation system, new technical standards to support the vehicle charging industry in the future. A greater charging network.

Clean energy-efficient production and manufacturing with a reduction in usage of chromium, mercury lead and radio emissions, and other harmful substances.

Mechanical and electronic waste disposal, recycling, and refurbishing.

Public-private partnership and awareness.

Skill development and innovation.

Well-paying green manufacturing jobs.

Green procurement practices.

Smart cities, smart agriculture, transportation, E agriculture, E-health.

Promoting domestic industry.

A very good example is that the USA is, striving to build an EV charging network across the 500000 km's of its highways giving a big boost to domestic make in the USA EV industry and EV charging industry to combat climate change and is striving to achieve 50 percent vehicle sales of EV by 2030.

Active equipment solutions: It includes shutting down associated cabinets and extra transmitters during low traffic so as to reduce energy consumption. This has resulted in saving nearly 4 Mn kW of electricity and a reduction in CO2 emission by 3,240,000 kg per annum.

Conclusion

To achieve net-zero emissions by 2050, a holistic approach is required that touches every corner of a business.

This includes data policies, energy transformation, supply chain initiatives, and product strategies.

ICTs can contribute to this transition by reducing the carbon footprint of the sector and enabling other sectors to do the same.

A company's procurement practices, product designs, logistics, business travel, investment decisions, and HR policies can all impact its total carbon footprint. It requires a complete organizational transformation and a focus on addressing the world's most critical climate challenges and transitioning to a circular economy.