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*[Nagpal,* 6(6): June 2019] ISSN 2348 – 8034
IDSTM-2019 Impact Factor- 5.070

GLOBAL JOURNAL OF ENGINEERING SCIENCE AND RESEARCHES

# ROLE OF MOBILE INDUSTRY IN ENVIRONMENT PROTECTION

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## ABSTRACT

The mobile industry is both taking great strides towards improving its own energy efficiency and enabling other industries to do the same. The Green Manifesto adopted by the industry show that, with right policies in place, the mobile industry can make a major contribution to the fight against global warming, lowering emissions in other sectors by around five times its own footprint. The industry has embarked on a new wave of investment that will make mobile broadband services and the Internet even more widespread and accessible than mobile voice services are today. Although this investment will see the industry grow dramatically over the next decade, building out new infrastructure and connecting many more people, it will aim to do so without increasing its greenhouse gas emissions. The spread of mobile connectivity is generating major social and economic benefits around the world - the renowned economist Jeffrey Sachs has called mobile phones "the single most transformative tool for development". But mobile phones also have the potential to be a transformative tool for lowering greenhouse gas emissions. The mobile phone, for example, could and should empower consumers to take control of their personal carbon footprint, enabling them to monitor and lower their power consumption in real-time using smart meters and other machines with embedded mobile devices in their homes and offices. In a similar way, mobile technologies can be used by many businesses, big and small, to cut waste and use energy much more efficiently. To realize this vision, policy makers need to take the lead, establishing, in consultation with the private sector, common standards and measurement methodologies and ensuring that embedded mobile connectivity is widely used to cut emissions. Indeed, the public sector must be at the vanguard in stimulating demand, ensuring mobile-enabled green solutions are a core requirement of all new investments in public infrastructure.
The paper focus on the initiates takes by industry to protect the environment in past and future steps to reduce the carbon emission to save the earth.

## I. INTRODUCTION

**Historical Perspective:**
In February 2009, Google announced the Power Meter, a dashboard application that wirelessly links to home metering devices and can read and display real-time energy use on your desktop computer or mobile phone. Suddenly, checking your home energy consumption is as easy as telling the time. The race is on for IT & telecommunications to lead the energy information revolution, when monitoring and managing energy are as common as sending email. This has huge implications for saving carbon: according to our SMART 2020 report, an energy efficiency revolution in logistics, power distribution, motor systems and buildings could save 15% of global emissions in 2020, or five times the size of the sector's own footprint from the internet, data centers, mobile phones and PCs. Energy efficiency is one of the lowest cost, quick-return options for cutting emissions, which along with halting deforestation, can achieve 70% of the reductions needed by 2020.

As we start to explore the possibilities in cyberspace, it has been said that the next generation will be 'digital natives', as well as climate conscious consumers. There is no doubt we are on the cusp of the next evolution in telecommunications, when the 4 billion people who in 2009 have access to handheld devices and the internet will double to 8 billion in 2020 , and machine-to-machine connections will reach 50 billion in the coming decade. As the network infrastructure is expanded, it is essential that the industry ensure that this growth is low carbon. The global industry's goal to reduce energy consumption by 40% per subscriber from today's levels is a positive step, and some companies have gone further to set absolute emissions reduction targets even as they see their businesses grow dramatically. These targets will help the industry innovate, and create beneficial side effects –for example in solar powered base stations that also charge mobile phones in local communities.

## II. THE MOBILE INDUSTRY'S GOALS

The mobile industry forecasts that it will reduce its total global greenhouse gas emissions per Connection by 40% by 2020 compared to 2009. This forecastcovers all emissions from energy sources under the control of the mobile operators, including energy consumption from the radio network, buildings, energy consumption and emissions from transport.

Mobile operators plan towork with handset vendors to ensure that the energy consumed by a typical handset is reduced by 40% in standby and in use by 2020. Mobile operators will also work with equipment vendors to ensure that the life cycle emissions of network equipment components are reduced by 40% in the same timeframe.

**Mobile's enabling role**

Mobile technologies are already being used to reduce greenhouse gas emissions and costs across a wide range of sectors of the economy, using SIM cards and radio modules embedded in machines and devices to deliver smart, intelligent solutions. By 2020 we estimate that mobile technologies could lower emissions in other sectors by the equivalent of taking one of every three cars off the road [3]Mobile communications can also make it straightforward for individuals to monitor their own carbon footprint, while being an effective channel for advice and suggestions to consumers on how to change their behavior to cut their emissions. The mobile industry could enable greenhouse gas emissions reductions of 1,150 Mt CO2e -twice the emissions of the United Kingdom[4] in 2020.

**How the mobile industry is reducing its greenhouse gas emissions**

In the past eight years, the total number of connections served by the global mobile industry has grown an average of 25% per annum to more than 4 billion today. The growth rate in Western Europe and North America has now slowed, but demand from Africa and Asia Pacific is increasing rapidly and will lead to a global market of approximately 8 billion connections by 2020 (excluding machine to machine connections, which are forecast to reach 50 billion by 2020[6] ), according to an analysis by Irbaris and Wireless Intelligence. That equates to a growth in mobile penetration from 49% of the world's global population in 2009 to 76% in 2020.

ISSN 2348 – 8034
Impact Factor- 5.070

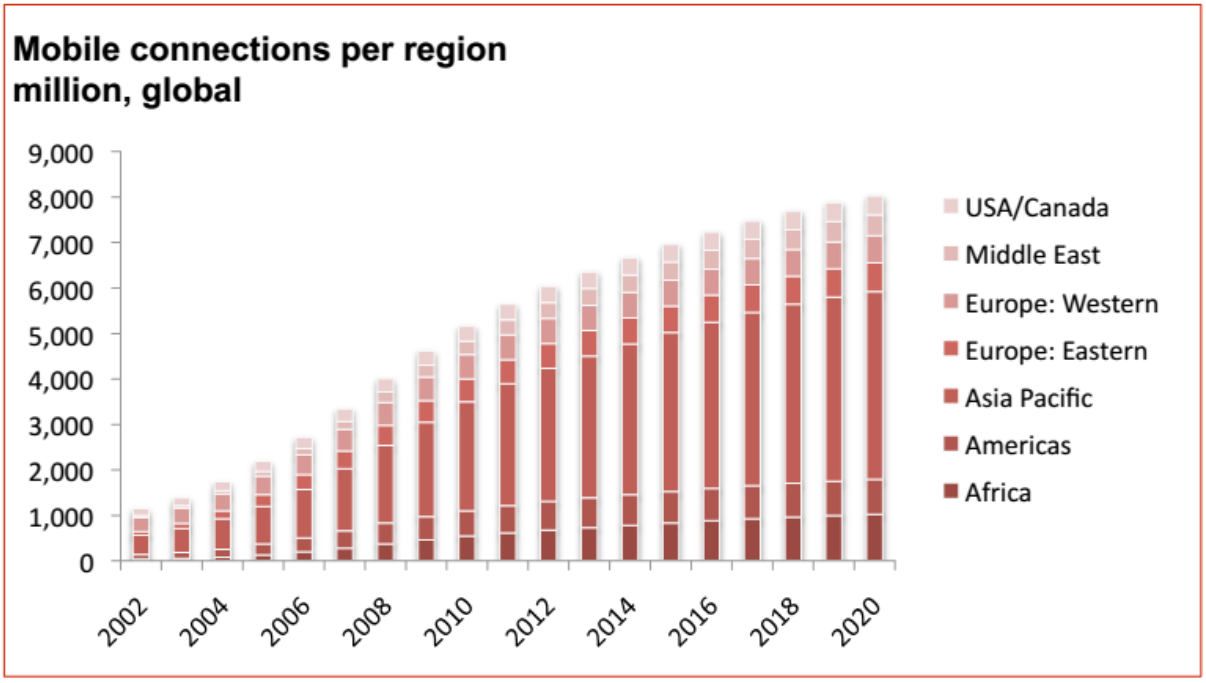


***Figure 1 - Connections In The Mobile Industry[8]***

The mobile industry is undertaking significant efforts to ensure this rapid growth is sustainable.
Greenhouse gas (GHG) emissions from the mobile industry arise from a number of sources:

- Energy consumed by the network in operation
- Embedded emissions of the network equipment, for example, emissions associated with the manufacturing and deployment of network equipment
- • Energy consumed by mobile handsets and other devices, when they are manufactured, distributed and used, as well as their embedded emissions.

The mobile industry forecasts that business and technology innovations by mobile operators and vendors will ensure that emissions remain at the 2009 level in 2020, even as the industry's total connections rise to 8 billion[11.]

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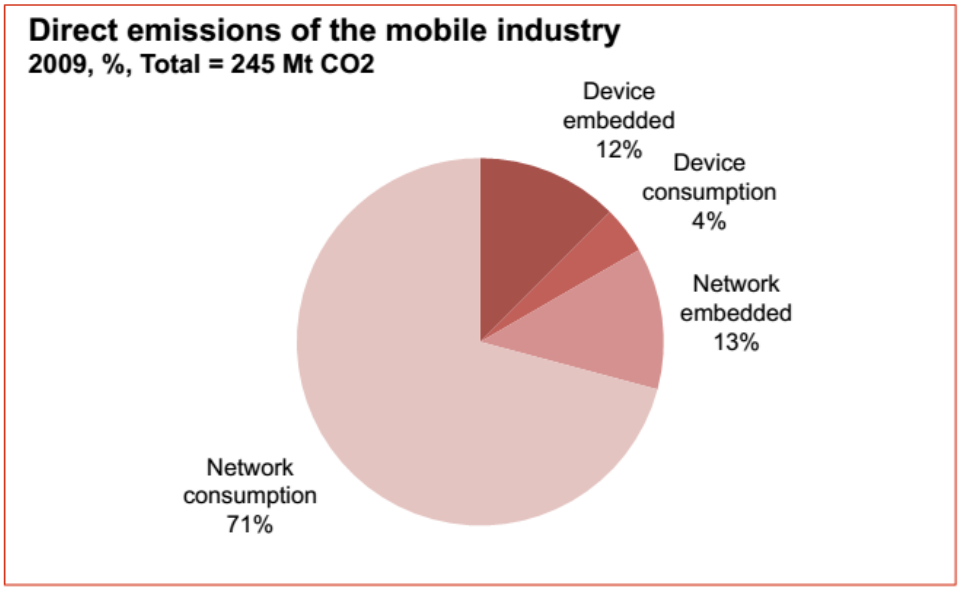



*Figure 2 –Direct emissions of the mobile industry* [10]

If the number of connections globally increases by 70% from 2009 to 2020 and emissions remain flat, the industry will have achieved an overall emissions reduction of 40% per connection in the period 2009-2020.

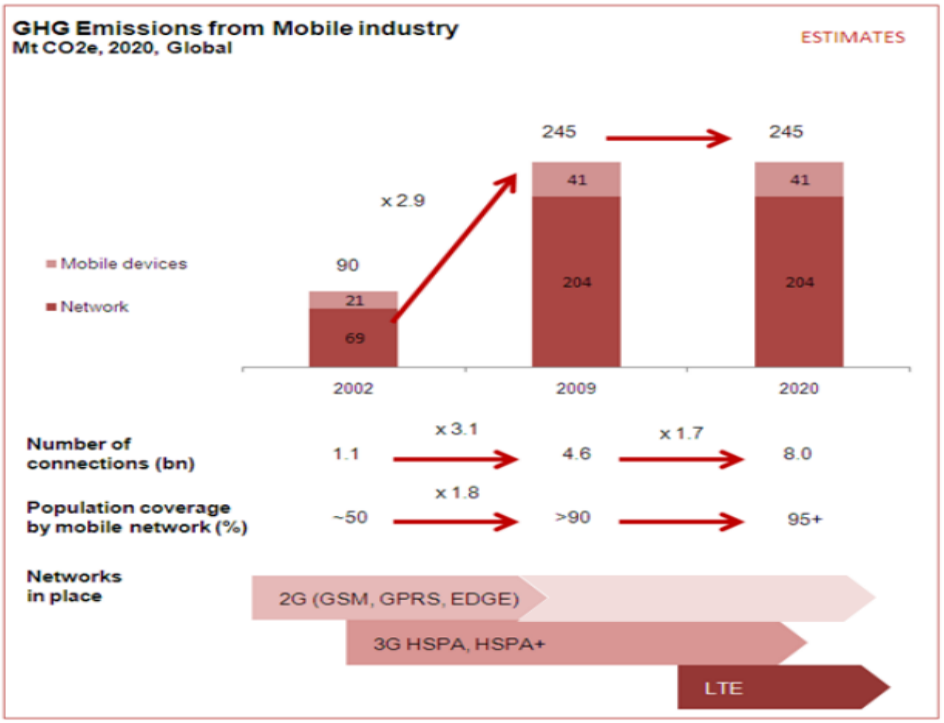



*Figure 3 -GHG Emissions from mobile sector*[10]

**Current initiatives in the telecom industry:**

Mobile operators and vendors are working on a number of initiatives to develop energy efficient networks and ensure that their customers use energy-efficient handsets.

**Designing low energy base station sites**

Cell sites account for most of the energy consumed by a mobile telecoms network. Typically, the power consumption of the support systems is more or less proportional to the power consumption of the telecom equipment. As the power consumption of the base transceiver station (BTS) is reduced, the power consumption of the infrastructure equipment, such as cooling systems, can be reduced. Considerable improvements in energy efficiency of base stations have been realised in recent years. For example, Ericsson has reduced the annual direct CO2e emissions per subscriber in the mobile broadband base stations it supplies from 31 kg in 2001 to 17 kg in 2005 and to 8 kg in 2007[15]

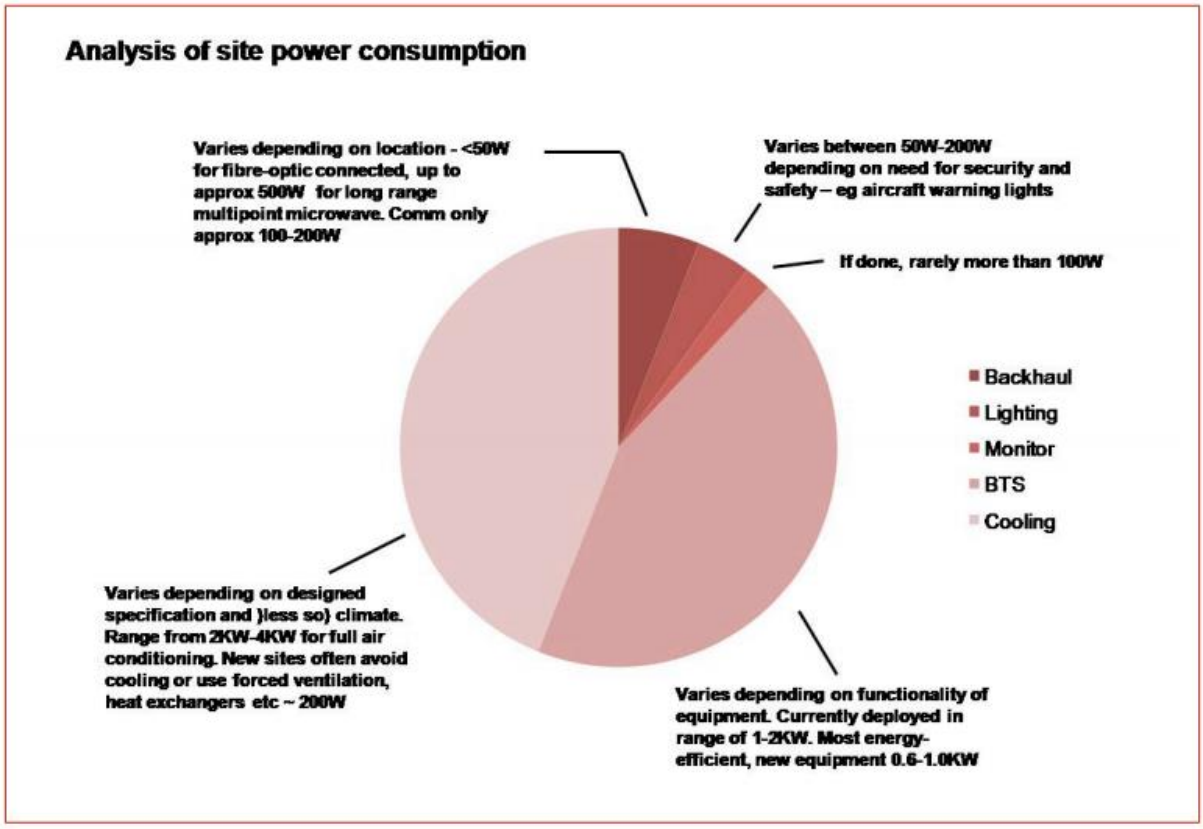



*Figure 5 -Analysis of site power consumption*[12]

Cooling systems are an integral part of the telecoms infrastructure. Without cooling, the telecom equipment is likely to overheat and fail or suffer a greatly shortened life. In the past, equipment providers specified equipment operating temperatures of up to 25°C. But 45°C is now common, enabling operators to reduce the overall energy consumption of the BTS by using passive cooling (fresh air) as opposed to active cooling (air conditioning).

- **Deploying base-stations powered by renewable energy:**

An estimated 1.6 billion people live without electricity and a further 1 billion people live in areas with unreliable access to power. In order to expand into areas without a reliable source of electricity, mobile operators have

primarily used diesel generators for power. However, as the price of diesel has risen and concern about GHG emissions has risen, operators have experimented with solar and wind powered base stations in both remote off-grid areas and in on-grid areas prone to blackout or brown out.

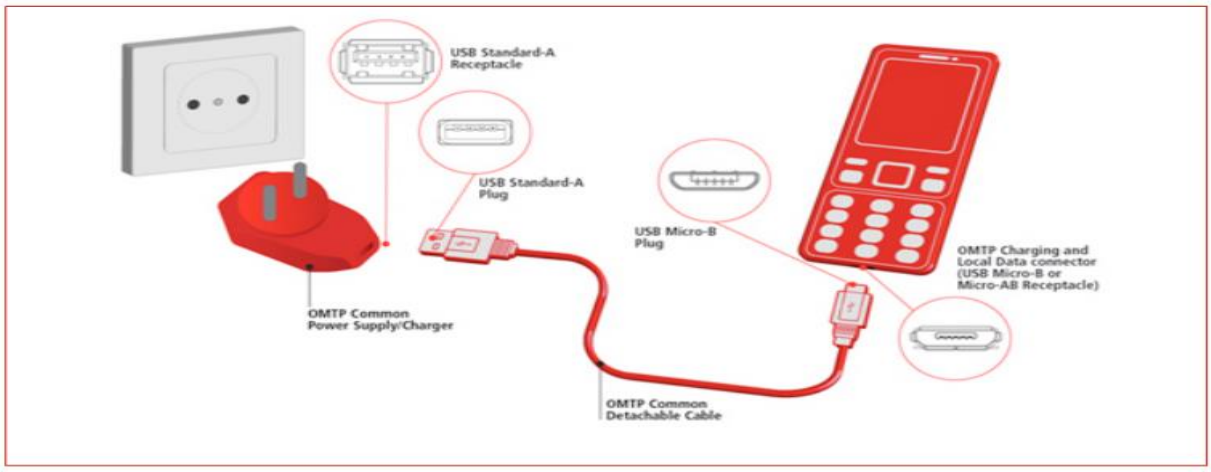
- **Implementing infrastructure optimisation and sharing**

Historically mobile networks have been designed in a way that optimises traffic flows. Increasingly operators now design networks, and specifically the number and location of BTS, in a way that optimises both traffic flow and energy consumption. However, they are often constrained by planning policies that make it difficult to site base stations in optimal locations.

To reduce both their costs and their emissions, mobile operators are also looking to share more infrastructure, but this can also be restricted by regulation. There are two levels of infrastructure sharing: passive and active. Passive sharing involves components such as the tower mast or pylons, cables, physical site or rooftop, shelter cabinets, power supply, air conditioning, alarm systems, etc. Active sharing includes antennas, antenna systems, backhaul transmission systems and the BTS equipment itself.[22]

- **Reducing mobile device life cycle emissions through design and recycling[24]**

The GSMA and 23 leading mobile operators and manufacturers have committed to implementing a cross-industry standard for a Universal Charging Solution for new mobile phones. This will enable the mobile industry to adopt a common format for mobile phone charger connections and energy-efficient chargers, resulting in an estimated 50% reduction in standby energy consumption, the potential elimination of up to 51,000 tonnes of duplicate chargers[25] every year, and the enhancement and simplification of the end-user experience. The initiative was launched by the GSMA at the mobile World Congress 2009 in Barcelona, supported by 3 Group, AT&T, HTC, KT, LG, Mobilkom, Motorola, Nokia, NTT DOCOMO, Orange, Orascom, Qualcomm, Rogers Wireless, Samsung, Softbank Mobile, SonyEricsson, TIM, Telefonica O2, Telenor, Telstra, T-Mobile, Vodafone, Wind.




**Universal Charging Solution**

Mobile telecoms is enabling significant GHG emission reductions in other sectors, but could do much more:The mobile industry is enabling significant reductions in GHG emissions and costs across a range of sectors of the economy, using M2M (Machine-to-Machine) and other communications to deliver so called smart solutions.

ISSN 2348 – 8034
Impact Factor- 5.070

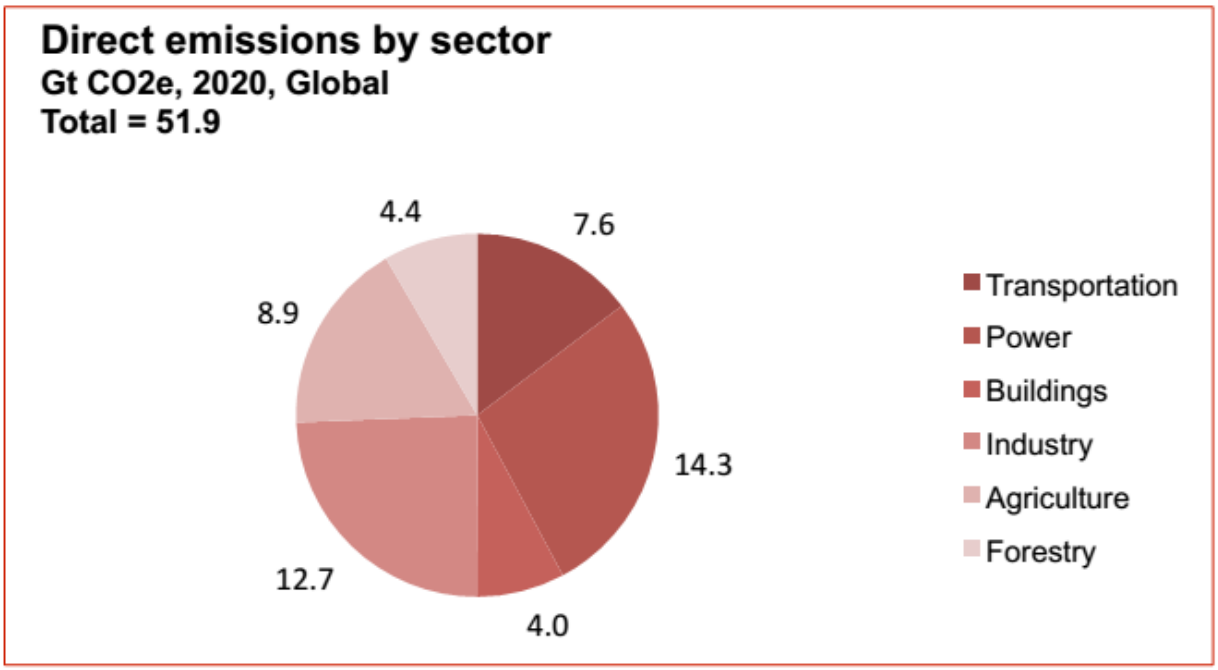



***Figure 8 -Direct emissions by sector38***

The report "SMART2020: Enabling the Low Carbon Economy in the Information Age"[15], published by GeSI and The Climate Group in 2008,assesses the direct and enabling impact of the ICT sector as a whole on global GHG emissions from 2002 to 2020.

The report details how a large set of ICT-enabled initiatives leading to GHG emissions reductions in the buildings, transportation, power, and industry sectors can lead to 7.8 GtCO2e reductions in 2020, from a total 2020 GHG emissions of 51.9 Gt CO2e on a "business-as-usual" trajectory.An extrapolation of results from the "Carbon Connections" and "SMART2020"[14]reports shows that the mobile industry can enable GHG savings of at least 1,150 Mt CO2e in 2020, or 2.2% of the global 2020 GHG emissions, in the "business-as-usual" scenario, provided the initiatives are rolled out worldwide.

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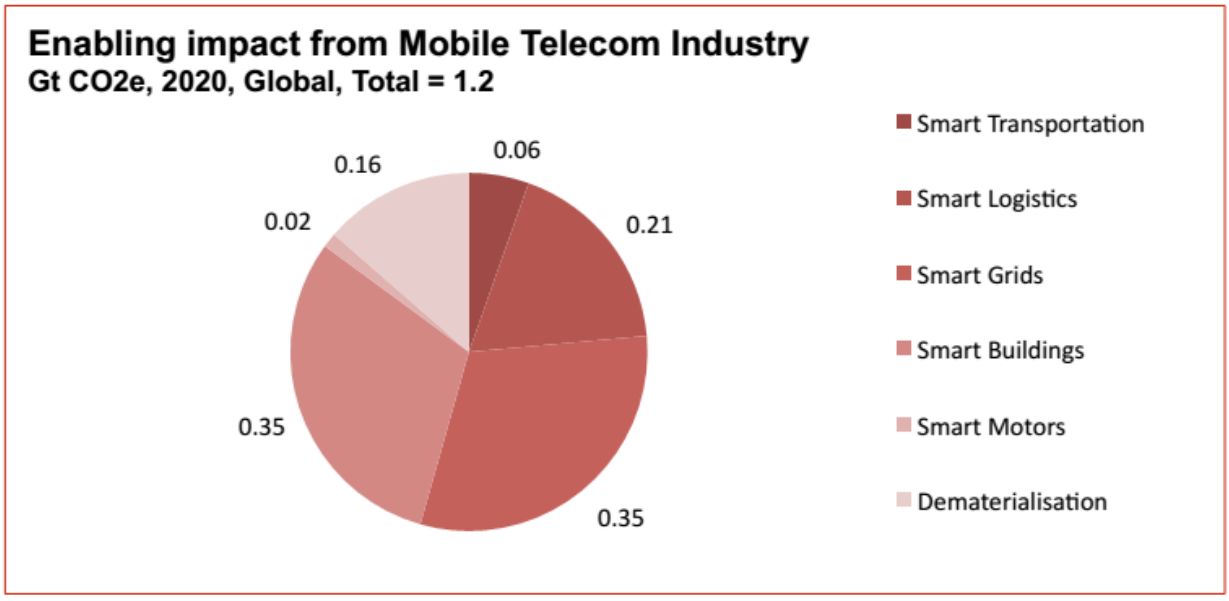


***Figure 9 -Enabling impact from mobile industry[13]***

So we clearly see and say
"ICTs are part of the solution, not part of the problem, and there are enormous gains to be made through the smart use of ICTs in virtually every single sector. Forward-thinking leaders already recognize the powerful role ICTs play in helping address climate change issues across the board. The importance of ICTs now needs to be recognized globally - and the vital role of ICTs as we move forward in dealing with climate change issues be further promoted."

## REFERENCE

1. *Connections do not include Machine to Machine SIMs*
2. *Irbaris analysis; SMART 2020, The Climate Group and GeSI, "Enabling the low carbon economy in the information age", 2008*
3. *The mobile industry's 1,150mt CO2e emission reduction is equivalent to 285m cars out of 900m cars on the road worldwide in 2009, assuming annual emissions per car of 4,000 kg CO2e*
4. *UNFCCC data, 2009*
5. *GSMAletter to G20 leaders, April 2009 This estimate assumes an average connection/subscriber ratio of 1.4 globally, in-line with Europe today.*
6. *Ericsson forecast for 2020: "Ericsson predicts that there will be over 50 billion connected devices by the year 2020"*
7. *GSMAWireless Intelligence and Irbaris analysis, excludes M2M; number of connections is the number of SIMs active at any point in time. The number of connections is typically larger than the number of subscribers.*
8. *GSMAWireless Intelligence and Irbaris analysis, excludes M2M; number of connections is the number of SIMs active at any point in time. The number of connections is typically larger than the number of subscribers.*
9. *Irbaris analysis; SMART 2020, The Climate Group and GeSI, "Enabling the low carbon economy in the information age", 2008; Ericsson, "Lifecycle Assessments of ICT", 2009; Nokia, "Lifecycle environmental issues of mobile phones", 2005. Emissions include full lifecycle from consumption / use and emissions tied to the manufacturing process.*
10. *Estimates; Irbaris analysis; see FAQ for complete set of assumptions; excludes emissions from office and commercial buildings and from transportation of employees. Ibidem*
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12. *Irbaris Analysis; SMART2020, The Climate Group and GeSI, "Enabling the low carbon economy in the information age", 2008; Vodafone "Carbon Connections: Quantifying mobile's role in tackling climate change", July 2009.*
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