THE HEALTH, SAFETY & ENVIRONMENT CHALLENGES OF MOBILE TELECOMMUNICATION INFRASTRUCTURAL DEPLOYMENT IN NIGERIA.

BY

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The Distinguished chairman, the Honorable chairman house committee on science and technology, the Honorable Ministers here present, the Executive vice-chairman of NCC, the Exalted speakers, Members of the high table, invited guests, respectable press crew, ladies and gentlemen.

It is indeed a unique privilege to be given this rare and wonderful opportunity to speak on the topic: ***the Health, Safety and Environment challenges of mobile telecoms infrastructural deployment in Nigeria*** on this praiseworthy stride by NCC in organizing this First West African conference on EMF Exposures and health. Needless to say it couldn't come at a better time

1.0 Overview:

The telecoms development in Nigeria since 2001 has been phenomenal. We have witnessed notable and rapid transformation following the liberalization of the communication sector since 2001. This has given rise to the enviable jump in both the number of active subscriptions and teledensities from the meager 400,000 active lines and teledensity of 0.44 in 2001 to the 101,077,658 active lines and a teledensity of 72.2% as at April 2012.

This development has necessitated the fast and huge deployment of such related equipments and infrastructures/facilities as, Base stations, mast/towers, transmitting antennas, mobile stations, satellite dishes, microwaves, optical fiber, switching equipments and the power generating sources for both the data and voice transmission across the country. However the desire for better quality of service, wider coverage and quest for broad band for data transmission means more of these infrastructures and equipments will be deployed in no distant future.

The interactions among these and the Nigeria Environment is further exposing us (scales and forms) to variety of Health, Safety and Environment related issues, hazards and risks. These are usually associated with the modification of aquatic and terrestrial habitats, hazardous materials and waste generation, Land and water pollutions, EMF emissions, air emissions, electrical hazards, noise exposure, optical fiber exposures, overhead works, Narrow space, vehicular and visual impacts among others.

2.0 A glance at the major telecoms HSE regulatory bodies in Nigeria

There are no specific standard and regulatory bodies or agencies dedicated for the regulation and management of mobile telecoms HSE in Nigeria. This understandably, and like in many parts of the world, is largely due to the diverse and multi-disciplinary nature of the HSE related hazards or issues. In Nigeria, telecoms HSE related issues are generally handled by appropriate Ministries and/or their designated agencies/departments. Not one agency has come out with detailed telecoms related occupational health and safety specific hazards or Environmental aspects management requirement or guideline. However, this is not to undermine the effort of the National Environmental Standards and Regulations Enforcement Agency (NESREA) to evolve the industry specific Environmental regulatory standards in 2011: The *National Environmental (standards for telecommunications and broadcast facilities) Regulations 2011.* Below are some of the key players in HSE regulation and administration in Nigeria.

2.1 The factories Act (Factory Act cap 126, LFN, 1990) and 'the Occupational safety and Health bill 2005:

The factories Act as contained in the Laws of the Federation of Nigeria 1990 seek to legislate and regulate the conduct of health and safety in the Nigerian workplaces. It was enacted in June 11, 1987 with the desire to protect the workers and other professionals against exposure to occupational hazard. The director of factories at the Federal Ministry of Employment, labor and productivity is responsible for the administration of the provisions or requirements of this Act. The director and his team

(inspectors) are vested among other, with responsibilities to register, inspect premises or factories, prohibit and administer penalties.

The apparent limitations in the nomenclature, scope, suitability and applicability of the factories Act within the current occupational Health and safety realities led to proposition of the Occupational Safety and Health bill 2005. For instance, on failure to report fatal accident by a company, the factories Act section 51(4) of the Act state: *Any employer or occupier of a factory who fails to report an incident under this section shall be guilty of an offence and shall on conviction be liable to a fine not exceeding ₦1000:00*. You'll agree with me that this penalty is inadequate to deter any factory from failing to report fatal incidents

The bill which also falls short of providing regulations standards for telecoms specific occupational Health and Safety hazards challenges is yet to move beyond the second reading at the National Assembly since 2005.

2.2 Nigerian Communication Commissions Acts (NCC Act 2003).

The Act authorized Nigerian communication commission, an agency under the Federal ministry of communications to be the regulator for all communications related activities. The agency is also empowered to ensure the maintenance of safety and protection of the Environment within the communication industry in Nigeria. For instance section 136(3) of the NCC Acts 2003 states that '*All licensees shall in connection with the installation of their respective network facilities, take all reasonable steps to act in accordance with good engineering practice; protect the safety of the persons and the properties; ensures that the activities interferes as little as practicable with (i) the operation of a public utility, (ii) public roads and paths (iii) movement of traffic, and (iv) the use of land and protect the Environment*'. This in a way imposes telecoms related HSE management responsibilities on NCC.

2.3 The National Environmental Standards and Regulations Enforcement Agency Act (NESREA Act 2007):

The National Environmental Standards and Regulations Enforcement Agency (NESREA) of the Federal ministry of Environment, housing and urban development is charged with the responsibilities of ensuring the wholesomeness of the entire Nigerian Environment through the development and enforcement of Environment standards and regulation.

This is explicitly stated in the NESREA act 2007 sections 2 and 7(a - m); Section 2 reads: *'the Agency (NESREA), shall, subject to the provision of the Act, have responsibility for the protection and development of the Environment, biodiversity conservation and sustainable development of the Nigeria's natural resources in general and environmental technology, including coordination and liaising with relevant stakeholders within and outside Nigeria on matters of enforcement of environmental standards, regulations, rules, laws, policies and guidelines*.

These functions obviously include the telecoms sector environmental standards and regulatory requirements.

2.4 National Oil Spills Detection and Response Agency Act (NOSDRA Act 2006)

The National Oil Spills Detection and Response Agency (NOSDRA), another subset of the Federal Ministry of Environment, housing and urban development, is mandated by the Act to legislate, regulate and manage oil spill detection, response planning and preparedness in Nigeria; Sections 5 and 19(2). Section 5 reads: *'The objective of the agency shall be to co-ordinate and implement the National Oil Spill Contingency Plan for Nigeria….'*

And section 19 (2) states that '*the agency shall act as the lead agency for all matters relating to oil spills response management and liaise with the other agencies for the implementation of the plan as contained in the second schedule*'

2.5 Department of Petroleum Resources (DPR)

A unit of the Federal Ministry of Petroleum resources responsible for the enforcement of the petroleum products, services and operations Safety and Environmental regulations and standards among other responsibilities in Nigeria. The DPR is saddled with statutory responsibilities of regulating, monitoring and maintaining the safety and integrity of the petroleum products storage and distribution facilities across the county.

2.5 others:

There are currently thirty-six (36) states in Nigeria plus the FCT. Each state's Environment protection board or body develops her respective Environmental requirements and expectations (ideally not undermining the Federal Ministry of environment provisions but

accommodation each state's Environmental peculiarities). We also have health, safety and environment related requirements from the local government department of health and social welfares that must be abided by all industries including the telecommunications in Nigeria.

3.0 The HSE challenges of Mobile telecommunications infrastructural deployment in Nigeria:

The deployment of mobile telecoms infrastructure/equipment by the operators in Nigeria is faced with several Health, Safety and Environment related challenges. These challenges range from policy and regulatory frameworks, through operations and implementation to monitoring and evaluation of mobile telecoms HSE management in Nigeria. Below are some of the commonly encountered HSE related bottlenecks by the operators in Nigeria in the deployment of telecommunication services.

3.1 The Compliance challenges

The deployment of mobile telecoms in Nigeria is saddled with the burden of complying with the various national HSE standard and regulatory requirements. There are many agencies responsible for one or more aspects of telecoms related HSE issues/hazards resulting in some instances, into different expectations and requirements from these agencies especially on environmental regulations. In all honesty, each National regulatory agency, in a way, is empowered by law to manage, regulate or ensure the safety of lives, properties and or the protection of the Environment. For instance the NCC, NESREA and NOSDRA etc are all involved in some aspects of the telecoms HSE management.

The bottom line is the apparent lack of clear delineation of the agencies' responsibilities, authorities, scope and functions. This is leaving the mobile telecoms operators at cross roads as to which, what, when and who to comply with on the HSE risk management obligations resulting in some instance into confusion, delays or halting of telecoms facility/infrastructure deployment.

3.2 The Radio Frequency emission and exposure HSE risks Concerns and misconception.

There is growing and worrisome concerns and misconceptions among the public, media, healthcare and indeed legal practitioners on the safety of mobile telephone. Currently, at least six (6) out of every ten (10) documented complains received by the mobile telecoms operators in Nigeria centre on the safety, health and Environment risk concerns. These ranges from the belief, to the assertion of the possibilities of such health impacts as cancers, habitual abortions, infertilities, birth defects, loss of sights, hearing losses, hemorrhagic anemia, tinnitus and alopecia from mobile telecoms equipment/infrastructures resulting in various spurious claims and in some cases needless litigations.

In more than half of the cases, the issue is with the general use of the term 'Radiation' for the non-ionizing Radiofrequency band of the Electromagnetic frequency (EMF RF) which is usually misconstrued to be same as the ionizing X –rays, Gama-rays or even radio-active 'Radiations', and such should cause the same harmful effects. There is also the dimension of access to unguided or uncensored publications from individuals, groups other than the responsible bodies or agencies on the safety of mobile telecommunication. The recent classification of EMF RF as possibly carcinogenic to human beings (class 2B), based on the rather none consistent indication of increased risk of *glioma* by the International Agency for Research on Cancer (IARC), in June 2011 is surely compounding these concerns, worries and apprehensions.

The resultant effect is that the operators' prospective and existing landlords and neighbors now either resist or reject the requests to site mobile telecoms equipment/infrastructures in and around their premises. This in part, account for the poor quality of services and notable service vacuums in several areas.

3.3 The non-uniform EMF RF exposure guidelines or standards:

There are worrisome disparities between some national and international EMF RF exposure guidelines and standards. For instance the Australian radiation protection and nuclear safety agency (ARPANSA) standards for RF EMF field range of 3 KHz to 300GHz and that of the International commission on Non-ionizing radiation protection (ICNIRP)

guidelines for EMF up to 300GHz. While the former is rather a technical standard with clearer and wider application, the later which is endorsed by WHO is a guideline with limited application and does not provide guidelines for Pulsated, non-linear, chronic or complex frequency effects of EMF RF.

This is posing very big challenges for the development of policy framework and criteria for controls, implementation, performance monitoring and compliance evaluation by the mobile telecoms HSE stakeholders and increasing apprehension and concerns by some members of the public, subscribers.

3.4 The safety and health risk of using the mobile stations (hand set) and living close to mobile telecoms base transceiver stations.

The mobile telecoms operators have received multitude of complain bordering on the concerns of possible adverse health impacts of living around the BTS and the use of handsets. More of the complainants are from people living within 100m radius of the BTS. They are usually asking for outright relocation of the infrastructures. Efforts to educate them that this has been the subject of intensive research for over 50 years and the consensus view by the WHO, ICNIRP and other responsible international and national agencies, scientific experts is that there is no substantiated evidence that the mobile telecoms emissions within the specified guideline cause adverse health effect usual fall into deaf ears.

3.5 The fall-out of diesel driven private power generating source

There are currently well over 15,000 BTS sites in Nigeria and more than 80% of them are powered by fossil fuel driven generators necessitating the need for between 2,000 - 6,000 liter capacity storage facilities on each BTS site. The operators have recorded no fewer than 125 incidents of ground water and land pollution cases in the last three years around the BTS facilities. Between 5-10% of the incidents are due to either malfunctioning of the fuel flow regulators or functional failures, while 20-25% are deliberate acts by the neighbors or owners of such well water to attract compensation. The rest are occasioned by the unwholesome activities of vandals/thieves, who after breaking the diesel lines and helping themselves sufficiently with the products leave the lines open to flow freely into such water bodies and lands. The operators are saddled

not only with the challenges of replacing lost diesel to ensure uninterrupted services, clean-up and remediate the environment but also to contend with bogus claims by the affected parties, negative publicities and in some instance taut penalties from some regulatory bodies.

3.6 The challenges of the Setback regulations.

The NCC and NESREA prescribed setbacks of 5m and 10m respectively for sitting telecoms mast/towers away from existing building. Understandably, the aim is to ensure minimal exposures to such Environmental hazards as noise, vibration, Gen set fumes and gaseous emission and RF EMF exposure etc. This is placing additional strain on the deployment of the required Base stations especially in built-up areas. One of the options available for the operators will be to site them away from the communities as green fields. Such locations will be built-up sooner or later anyway and the cycle will continue. More so, providing telecom coverage for such areas will require transmitting at relatively higher powers for the desired result thus, bringing yet another challenge associated with elevated Environmental RF EMF level and service interruptions.

Interestingly, experience has shown that a well positioned, adequately maintained and sound-proofed 27KvA generator (note that more than 75% of the generators at base station sites are usually 15KvA), not only conform to day and night noise requirements even at closer range but, that the change in the levels of these parameters at 5m or 10m is negligible (usually an average of 0.5-1.5 decibels for noise). Poorly maintained and inappropriately positioned gen sets at 20m or more away from residence are known to fail the requirement. Ironically people living 5m-150m range of base station are exposed to far lower RF EMF than those immediately beyond and the exposed level are usually several thousand times below the ICNIRP permissible exposure limits. So, in reality there is little benefit from the setback requirement.

3.7 The Environmental Impact Assessment (EIA) and telecoms deployment.

The current requirement of conducting site specific EIA is putting strains on the rate of site roll out and deployment. Understandably, the desire is to take into cognizance the peculiarities of the Environment in which the BTS are located round the season. An

operator's network is made up of several similar base stations with virtually the same physical components. Treating each BTS as a distinct project has shifted the average time for the roll out of a BTS from 4-6 weeks to 9months and beyond. This will surely negate the national and ITU global telecoms services goal for 2015.

4.0 Way forward

The following are suggestions on how at least majority of the challenges could be resolved.

4.1 Harmonization and delineation:

Some of the challenges relating to regulations and standards can be resolved by harmonizing the regulations and clearer delineation of authorities and responsibilities. Each of the relevant stakeholders' regulatory and standard requirements can then be accommodated in the NCC guidelines for the operators.

4.2 Research, Public and Occupational exposures monitoring:

The NCC and all such other regional bodies should engage in researches in line with WHO guidelines and periodically measure, monitor and verify the public and occupational exposures to EMF to assure compliance with ICNIRP or other relevant standards. This will not only go a long way douse the apprehension, but will also provide data bank for analysis and further research.

4.3 *Designation of telecoms facilities as Critical*:

Owing to the economic, social and security importance of the telecoms services, it is necessary to designate telecommunications infrastructure/facilities as critical national assets/facilities and evolve appropriate policy that prohibit vandalization of such as with PHCN infrastructure.

4.4 Improve security at site:

The operators should improve security at sites. This will reduce the incidents of site vandalism and consequent spillages /seepages, water and land pollutions

4.5 Awareness and public enlightenment:

The operators and regulators should engage all the stakeholders in public education, enlightenment on the safety and health aspects of telecommunication. This will erase misconception and improve acceptability

4.6 Alternative power source:

A substantial part of problems as Noise, vibration, diesel pollution and gen set gaseous emission are all generator power related. In the face of the continued insufficient national power supply, the development of cost effective and environmentally friendly alternative power sources will abate these and remove related complains, regulations and litigations.

4.7 HSE incidents Notification and management:

The operators should be made to report HSE related incidents to NCC immediately they occur. This will help to track incidents, escalate to relevant stakeholders and make meaningful deductions from the analysis of the root causes and other parameters.

5.0 Conclusion:

Ladies and gentlemen the magnificent and enviable feat attained by the communications sector over the last ten years have no doubt revolutionized the conduct of businesses and personal lives in Nigeria, and these gains can only be sustained and improved upon if all the stakeholders work together as partners with common vision and the time to act is now.

Thank you very much for your time and wonderful audience.