

## NESREA AND NCC REGULATIONS ON TELECOMMUNICATION MASTS: IMPLEMENTING THE PRECAUTIONARY PRINCIPLE

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### ABSTRACT

There have been conflicting findings in studies conducted to determine whether or not electromagnetic radiations (EMR) emitted by telecommunication masts are injurious to human health and the environment. The recent imbroglio between the National Environmental Standards and Regulations Enforcement Agency (NESREA) and the Nigerian Communications Commission (NCC) brought this matter to the fore in Nigeria. The conflict relates to the set back distance telecommunication operators are required to adopt as they site their masts near buildings. While NESREA's Regulation provides for a farther distance because of its belief that electromagnetic radiations do have adverse impact on human health; NCC on the other hand insists that EMR does not pose any danger to human health. Having examined literature, report of studies and various opinions, it is evident that the scientific community is yet to agree on the effects of EMR on human health and the environment. This paper argues that this lack of scientific certainty should not be a reason to delay legislative action that will safeguard people's health and their environment.

The paper evokes the importance of the precautionary principle of international law to the effect that lack of full scientific evidence should not be used as a reason for postponing measures to prevent irreversible illnesses and environmental degradation that may result from EMR emitted by telecommunication masts. This paper discusses the need for regulatory agencies and the legislature to adopt the precautionary principle as they review and harmonise the two overlapping Regulations.

**Keywords:** Telecommunication Towers, NESREA, NCC, RF, EMR, Precautionary principle

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## 1. INTRODUCTION

On 19 April 2012, a national newspaper carried the news that the National Environmental Standards and Regulations Enforcement Agency (NESREA), shut down MTN Group's<sup>1</sup> Base Transceiver Stations (BTS<sup>2</sup>) (hereinafter referred to as base stations) in EFAB City estate in Abuja.<sup>3</sup> NESREA claimed that it took the step following incessant complaints from residents since 2009 about a MTN base station that was erected dangerously close to some houses. The base station was said to be sandwiched between a pharmacy and a drinking bar. NESREA further explained that MTN had clearly violated its Regulation by not complying with the 10 metres set back distance provided for in its regulation.<sup>4</sup> The base station was said to be only 1.2 metres away from the premises.<sup>5</sup> Thereafter, the Nigerian Communications Commission (NCC) re-opened the base station insisting that it had the sole mandate to regulate the telecom industry and not NESREA. It contended further that the MTN base station had met NCC's regulation of five metres set back distance from the houses.<sup>6</sup>

This was the beginning of the tussle between NESREA and NCC over which of the two is the appropriate agency responsible for regulating the operations of base stations of telecommunication companies in Nigeria. Although, the supervising ministries of the two agencies, Ministry of Communications Technology and the Ministry of Environment, have since met and they seem to have resolved the imbroglio, the solutions proffered arguably remain temporary ones.<sup>7</sup> One of the solutions arrived at is that telecom facilities that were erected before NESREA's Regulation<sup>8</sup> came into being and

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1. The MTN Group is a South Africa-based multinational mobile telecommunications company operating in Nigeria. See <<https://www.mtn.com/Pages/Home.aspx>> accessed June 10, 2015.

2. Equipment that provides the link between wireless communications and land-based public telephone switching networks.

3. 'NESREA Shuts MTN Base Station' *Daily Trust Newspaper* (Kaduna, 19 April 2012) <<http://allafrica.com/stories/201204190408.html>> accessed 21 August 2012.

4. *Ibid.*

5. Oladeji, 'Inter-Agency War: Who Wins, NESREA or NCC?' *Leadership* (Abuja, 15 May 2012) <<http://allafrica.com/stories/201205150163.html>> accessed 21 August 2012.

6. The Guidelines on Technical Specifications for the Installation of Telecommunications Masts and Towers 2009 (NCC Guidelines 2009) s.9(9)(c).

7. This was at the instance of the supervising ministers of the Ministries, Mrs Omobola Johnson and Hajiya Hadiza Ibrahim Mailafia. See A Adeyemi, 'Government Resolves NCC, NESREA Feud over Telecoms' Facilities Control' *Guardian* (Lagos, 1 June 2012) <[www.informationng.com/2012/06/govt-resolves-ncc-nesrea-feud-over-telecoms-facilities-control.html](http://www.informationng.com/2012/06/govt-resolves-ncc-nesrea-feud-over-telecoms-facilities-control.html)> accessed 21 August 2012.

8. National Environmental (Standards for Telecommunications and Broadcast Facilities) Regulations 2011 (NESREA Regulations 2011) s.5(4).

which complied with NCC's five metre set back should not be sealed while new facilities that are to be set up after the law came into force will have to comply with NESREA's provision of 10 metres set back.<sup>9</sup> This truce is meant to last until the Regulations of both Agencies are harmonised.<sup>10</sup> NESREA predicated its actions on the need to protect the environment in line with its mandate in NESREA Act of 2007. While NCC contends that it has the sole mandate to regulate the telecom industry and that NESREA has encroached into its operational boundary. In view of this conflict, it becomes imperative that a permanent solution is proffered for the sake of all stakeholders.

The aim of this paper is to evaluate and discuss which of the two distinctive set back distances prescribed by NCC and NESREA, will engender sustainable development in Nigeria. The scientific community is yet to agree on the effect of electromagnetic radiations (EMR) on human health and the environment and what constitutes a safe and healthy set back distance for telecommunication masts. This paper argues that this lack of scientific certainty should not be a reason to delay legislative action that will safeguard people's health and their environment. The paper evokes the importance of the precautionary principle of international law to the effect that lack of full scientific evidence should not be used as a reason for postponing measures to prevent irreversible illnesses and environmental degradation. This paper discusses the need for regulatory agencies and the legislature to adopt the precautionary principle as they review and harmonise the two overlapping Regulations.

This paper is divided into six sections, this introduction being the first. Section two provides background information about the regulatory oversight roles of the NCC over telecommunication masts, while section three discusses the key regulatory roles of NESREA. Section four discusses the overlap and intersections between NESREA and NCC's oversight and regulatory functions over telecommunication masts. Section five discusses legal and institutional frameworks for addressing these overlap. This section analyses the need for a regulatory approach based on the precautionary principle of international law to anticipate and prevent environmental harm that may result from indiscriminate siting of telecommunication masts. This paper concludes in section six.

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9 A Adeyemi (n 7).

10 Ibid.

## 2. THE NIGERIAN COMMUNICATIONS COMMISSION (NCC) AND THE REGULATION OF THE TELECOMMUNICATION SECTOR

Nigeria embraced digital technology in the 1980s with the introduction of Digital Switches and Transmission Systems (Radio and Optic fibre) into the network.<sup>11</sup> In the early 1990s, mobile telephone services (Cellular), paging and electronic mail became additions to part of the services offered by the Nigerian Telecommunications Plc (NITEL). In 1992, NITEL was commercialised as a result of the deregulation policy of the Federal Government while the Nigerian Communications Commission (NCC) was established. Thereafter, the Commission commenced full market liberalisation and sector reform. It auctioned GSM licences in 2001 and these ushered new entrants into the telecommunication sector, new entrants like Multilinks, MTN, Zoom, Visafone, Airtel, Glo and Etisalat. The Commission is governed by the Nigerian Communications Commission Act No. 19, 2003. It was established with responsibility for the regulation of the communications sector in Nigeria.<sup>12</sup> It is the Commission's responsibility to specify and publish technical code and specifications in respect of communications equipment and facilities in use in Nigeria.<sup>13</sup> The technical code and specifications include, among others, the promotion of safety of network facilities and the adoption of technical standards promulgated by international bodies.<sup>14</sup> Section 136 (3) of the NCC Act, 2003 requires that in connection with the installation of their respective network facilities, operators shall take all reasonable steps to protect the safety of persons, property and the environment.

Pursuant to the NCC Act, the NCC issued many Guidelines and Regulations among which is the Guidelines on Technical Specifications for the Installation of Telecommunications Masts and Towers, 2009 (hereinafter referred to as 'the NCC Guidelines 2009'). The Guidelines provide standards to be adhered to by telecommunications services providers/operators and installers of telecommunications towers towards ensuring environmental safety and sound engineering practices.<sup>15</sup> Consequently, section 9(9)(c) of the NCC Guidelines 2009 provides that the distance for set back of towers

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11 OM Sadiq and others, '10 Years of Telecommunications Infrastructure Development in Nigeria' (International Conference on Innovations in Engineering and Technology, Lagos, August 2011).

12 Nigerian Communications Commissions Act 2003 (NCCA 2003), s.3(1)

13 Ibid, s.130(1).

14 Ibid, s.130(2).

15 NCC Guidelines 2009, s.1(1).

shall be five metres from any demised property excluding the fence. The NCC Guidelines 2009 also provides that all generators within a base station must be sited five metres away from all demised properties excluding the fence.<sup>16</sup> All towers sited within residential areas must conform to the set back stipulated in the Guidelines to mitigate the effect of heat, smoke and noise pollution arising from generating sets.<sup>17</sup>

### 3 NATIONAL ENVIRONMENTAL STANDARDS AND REGULATIONS ENFORCEMENT AGENCY (NESREA) AND THE TELECOMMUNICATIONS SECTOR

National Environmental Standards and Regulations Enforcement Agency was established by the National Environmental Standards and Regulations Enforcement Agency Act of 2007. The Federal Government, pursuant to section 20 of the 1999 Constitution of Nigeria, as amended, established the Agency as a parastatal of the Federal Ministry of Environment. The Agency is responsible for the enforcement of environmental standards, rules, regulations, policies and guidelines.<sup>18</sup> In line with its mandate, the Agency developed, among many other Regulations, the National Environmental (Standards for Telecommunications and Broadcast Facilities) Regulations, 2011. The main thrust of the Regulations is to among others, ensure consistent application of environmental laws, regulations and standards in all sectors of the telecommunications and broadcast industry in Nigeria.<sup>19</sup>

This explains the reason for NESREA's foray into the telecommunications arena. Consequently, regulation 5(4)(1)(b) of NESREA Regulations, 2011 stipulates that all new facilities shall have a minimum set back of 10 metres from the perimeter wall of any premises to the base of the mast/tower. This is the point at which NCC and NESREA differ. The former prescribes a five metre set back while the latter favours a 10 metre set back of the telecommunication base stations. It was the enforcement of this provision in NESREA's Regulation that led to NESREA shutting down the base station of MTN as recounted at the beginning of this paper. The MTN mast in question had a set back of 1.2 metres, which is even less than the distance stipulated in both Regulations.<sup>20</sup> That action of NESREA led to the sealing

16 Ibid, s.13(6)(a).

17 Ibid, s.3(3).

18 NESREA Act 2007, s.1.

19 NESREA Regulation 2011, reg 2.

20 B Oladeji (n 5).

up and the shutting down of a series of base stations (22)<sup>21</sup> in different States of the Federation belonging to other telecommunication companies like Airtel, Glo etc.<sup>22</sup>

As at the time the conflict was ongoing, NESREA had unsealed two of the base stations while it took the NCC to court over the remaining 20 base stations. These conflicting regulatory roles between the two Agencies led the Senate to decide on a review of the laws setting up the Agencies.<sup>23</sup> One is at a loss as to how the two government agencies, purporting to be following international standards and specifications for the siting of telecom towers and base stations arrived at different set back distances in their Regulations. But what really is the essence of the set back? To answer the question, an understanding of the impact of telecommunication towers and base stations is imperative.

#### 4 TELECOMMUNICATION FACILITIES AND THEIR IMPACT ON THE ENVIRONMENT

Mobile phone base stations<sup>24</sup> and telecommunications towers<sup>25</sup> emit radiofrequencies (RF), a form of electromagnetic radiation (EMR)<sup>26</sup> for a distance of up to 2 miles (322 metres). They are essentially the same frequency radiation as microwaves in a microwave oven.<sup>27</sup> Mobile phones

21 This figure has been disputed by NCC, which claimed that 52 base stations were sealed. E Okonji, 'NCC, NESREA Await Court's Verdict on Mast Regulation', *This Day* (Lagos, 16 August 2012) <[www.thisdaylive.com/articles/ncc-nesrea-await-court-s-verdict-on-mast-regulation/122484](http://www.thisdaylive.com/articles/ncc-nesrea-await-court-s-verdict-on-mast-regulation/122484)> accessed 21 August 2012.

22 'Crisis in the Telecoms Sector: The FDI implication' *Vanguard* (Lagos, 21 August 2012) <[www.vanguardngr.com/2012/07/crises-in-telecom-sector-the-fdi-implications](http://www.vanguardngr.com/2012/07/crises-in-telecom-sector-the-fdi-implications)> accessed 21 August 2012; E Okonji, 'NATCOMS Faults NESREA Over the Sealing of Base Stations' *This Day* (Lagos, 13 June 2013) <[www.thisdaylive.com/articles/natcoms-faults-nesrea-over-sealing-of-base-stations/150210](http://www.thisdaylive.com/articles/natcoms-faults-nesrea-over-sealing-of-base-stations/150210)> accessed 1 July 2013.

23 Fùgwuoke, 'Senate to Review NCC, NESREA Acts' *This Day* (Lagos, 5 August 2012) <[www.thisdaylive.com/articles/senate-to-review-ncc-nesrea-acts/121581](http://www.thisdaylive.com/articles/senate-to-review-ncc-nesrea-acts/121581)> accessed 21 August 2014.

24 This is often a self-supporting structure such as a robust concrete pole or a lattice tower that houses single or multiple antennas, which appear as vertically, elongated rectangular panels. Base stations are required to transmit and receive radio signals from mobile phones and other wireless devices. Without a base station in a subscriber's vicinity, it would be impossible to make or receive calls and maintain the calls as the subscriber moves or drives around. See Association of Licensed Telecommunications Operators of Nigeria's Submissions in respect of NESREA's Draft Environmental Regulations for the Telecommunications Industry 2010 (ALTON's submissions) 1,7 <<http://www.altonnig.com/docs/ALTON%20Comments%20on%20NESREA%20Regulations%20for%20Telecoms%20Facilities.pdf>> accessed 9 August 2014.

25 The actual structure varies depending on its purpose. E.g. it can be in form of a pole, lattice tower, or guyed mast (masts that are stabilized by tethered wires). The tower will either act as an antenna itself or support one or more antennas on its structure, including microwave dishes.

26 Wherever electricity is generated, transmitted, or used, electric and magnetic fields (EMF) are created, due to the presence and motion of electric charges.

communicate with towers through radiofrequency (RF) waves. These telecommunication networks consist of interconnected elements that guarantee coverage. The elements of the network that are most visible to the public are the mobile phones and antennas that allow connection to the phones. Though some say that ‘telecommunication masts are to phone users what food is to the body’, yet there are claims that these electromagnetic radiations are injurious to health and the environment.<sup>28</sup>

Some have dismissed such claims because the radiofrequency (RF) and electromagnetic energy (EME) exposure levels produced by these facilities are said to be weak and that the level of emissions from cellular infrastructure is lower than emissions from some household appliances like microwave ovens and televisions.<sup>29</sup> It is said further that the weight of international scientific opinion is that there is no substantiated evidence that RF emissions associated with living near a mobile phone base station or telecommunications tower poses a health risk.<sup>30</sup> The World Health Organisation (WHO) also declared that ‘The levels of RF exposure from Base Stations and wireless networks are so low that the temperature increases are insignificant and do not affect human health’.<sup>31</sup> Even at that, WHO keeps encouraging extensive research in this area through its research agendas.<sup>32</sup>

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- 27 ‘Microwave and Radio Frequency Radiation Exposure’ (2001) 74 *San Francisco Medicine* in K J Rogers, ‘Health Effects from Cell Phone Tower Radiation’ (The Bioregional Ecology Centre 2002) <[http://www.mountshastaecology.org/Archive/Health\\_Effects\\_from\\_Cell\\_Phone\\_Tower\\_Radiation.html](http://www.mountshastaecology.org/Archive/Health_Effects_from_Cell_Phone_Tower_Radiation.html)> accessed 29 August 2014.
- 28 SJ Genuis, ‘Fielding a Current Idea: Exploring the Public Health Impact of Electromagnetic Radiation’ (2007) *Public Health* doi: 10.1016/j.puhe.2007.04.008 1, 3 <<http://www.ntia.doc.gov/legacy/broadbandgrants/comments/6E09.pdf>> accessed 21 August 2014; A Atili, ‘Are Telecom Masts harmful to Health?’ *The Nation* (Lagos, 11 July 2012) <[www.thenationonlineng.net/2011/index.php/business/infotech/53111-are-telecoms-masts-harmful-to-health.html](http://www.thenationonlineng.net/2011/index.php/business/infotech/53111-are-telecoms-masts-harmful-to-health.html)> accessed 21 August 2014.
- 29 ALTON’s Submissions (n 25); B Levitt and H Lai, ‘Biological Effects from Exposure to Electromagnetic Radiation Emitted by Cell Tower Base Stations and Other Antenna Array’ (2010) 18 *Environ Rev* 369, 373; The Australian Radiation Protection and Nuclear Safety Agency Fact Sheet, 28 November 2013 <[http://www.parliament.wa.gov.au/publications/tables/papers.nsf/displaypaper/3911225a22ede75d7cfe107f48257c35000c81ce/\\$file/1225.pdf](http://www.parliament.wa.gov.au/publications/tables/papers.nsf/displaypaper/3911225a22ede75d7cfe107f48257c35000c81ce/$file/1225.pdf)> accessed 29 August 2014.
- 30 A Ahlbom and M Feychting, ‘Electromagnetic Radiation: Environmental Pollution and Health’ (2003) 68 *Oxford Journals* 157.
- 31 World Health Organisation, Electromagnetic Fields and Public Health Fact Sheet No.304 May 2006 <<http://www.who.int/peh-emf/publications/facts/fs304/en/>> accessed 27 May 2014; See also PA Valberg and others, ‘Workgroup Report: Base Stations and Wireless Networks – Radiofrequency (RF) Exposures and Health Consequences’ (2007) 115 *Environ. Health Perspect.* 416 (This is an article on the key points addressed at an expert workshop to discuss the current state of cellular-telephone health issues convened by the World Health Organisation).
- 32 The most recent being: World Health Organisation, ‘WHO Research Agenda for Radiofrequency Fields’ 2010 <[http://whqlibdoc.who.int/publications/2010/9789241599948\\_eng.pdf?ua=1](http://whqlibdoc.who.int/publications/2010/9789241599948_eng.pdf?ua=1)> accessed 11 April 2015.

In Nigeria, telecommunication operators under the aegis of Association of Licensed Telecommunications Operators of Nigeria (ALTON) are resolute in their belief that the electromagnetic energy emitted by these facilities are 'harmless' and are 'safe for humans'.<sup>33</sup> One wonders why they are so resolute when just few studies or research on the effect of EMF has been conducted in only some selected areas of Nigeria to disprove the claims.<sup>34</sup> Ayinmode and Farai, though disputed the claims, admitted that it will take a lot of research publications to prove that there are no or limited health risks associated with the BTS while Eyinaya and Avwir counselled that residential and office buildings should be located 'hundreds of metres away from base stations' despite the fact that the RF radiation value they obtained from their research was low.<sup>35</sup>

Besides, several medical reports have linked illnesses to radiation emitted by telecommunication masts. A case in point is a medical report issued to Mr Afolabi Oyekanmi (who has a mast sited within his premises) at the Ado Ekiti University Teaching Hospital which stated that 'It is apparent that locating a telecom mast too close to his house is detrimental and hazardous to his medical condition if not the cause'.<sup>36</sup> The man was taken to the accident and emergency unit of the hospital in January 2011 with complaints of loss of consciousness associated with convulsion. The reason the doctors gave for their conclusion is that he is not a known epileptic, diabetic,

33 ALTON's Submission 8.

34 P I Enyinaya and G O Avwir, 'Characterization of the RadioFrequency Radiation Potential of Alakahia and Choba Communities, Nigeria' (2010) 7 *Facta Universitatis: Working and Living Environmental Protection* 25, 30. This study was carried out in the Alakahia and Choba communities in Port Harcourt, Rivers State. The aim of the researchers was to determine the specific absorption rate of RF radiation that residents around the surveyed GSM Base Stations were exposed to, so as to evaluate the health implications of such exposure. Although, the values obtained were low, the researchers stated that some of the surveyed Base Stations have power densities within the range that has been confirmed by previous researchers to be linked with cases of fatigue, headache, sleep disturbance and loss of memory; B O Ayinmode and I P Farai, 'Evaluation of GSM Radiation Power Density in Three Major Cities in Nigeria' (2014) 8 *International Journal of Environmental, Ecological, Geological and Geophysical Engineering* 675, 677. The authors assessed the level of exposure to RF radiation from BTS in Lagos, Abuja and Ibadan and concluded that RF exposure due to GSM signals cannot contribute to health hazards.

35 Ibid.

36 Editorial, 'Dangers of Telecom Masts' *Leadership* (Abuja, 19 April 2012) <<http://allafrica.com/stories/201204200131.html>> accessed on 21 August 2012. In Canada, some residents petitioned the Canadian Commissioner of the Environment and Sustainable Development and alleged that electromagnetic radiation emitted from telecommunication towers is causing significant health issues to people living in close proximity to the transmitters. See Sharon and Dennis Noble (Petitioners) 'Health Impact of Electromagnetic Radiation from Telecommunications Towers Located in Close Proximity to Residential Areas' 22 June 2008 <[http://www.oag-bvg.gc.ca/internet/english/pet\\_255\\_e\\_31626.html](http://www.oag-bvg.gc.ca/internet/english/pet_255_e_31626.html)> accessed on 29 August 2014.



hypertensive or asthmatic patient. Similarly, the doctors at the University College Hospital, Ibadan linked emission of electromagnetic impulses from the masts located close to the homes of the Adebusola Ogundipe family of Ibadan to their ailments. The health of the whole family is said to be in danger. The matriarch of the family suffers from sensation of pain and tingling on her legs and in addition has been diagnosed to have developed leukaemia. Her children suffer memory loss, dizziness and bleeding from their noses. It is obvious that these ailments are not coincidental; they are a result of certain environmental factors.

Therefore, we cannot overemphasise the importance of the proposal made by the Chief Medical Director of the University Teaching Hospital, Ibadan, Prof. Temitope Alonge's for a 20 years epidemiological study that is well designed, well funded and Nigerian oriented to further research into possible health and environmental impacts of radiation emitted by telecommunication masts.<sup>37</sup> This will help to eliminate confounding factors and show clear-cut evidence or otherwise of effect of EMF on health. He was optimistic that such research will help the government and regulators in policy formulation. The Minister of Health, Professor Onyebuchi Chukwu, admitted that research findings have been mixed.<sup>38</sup> He then urged telecom operators to carry out local epidemiological research measuring radiofrequency exposure in the country.

Despite these claims being refuted, there is said to be vast scientific, epidemiological and medical evidence that confirms that exposure to the RF emitted from cell towers, even at low levels can have adverse effects on biological systems.<sup>39</sup> Various studies have shown that even at low levels of radiation, there is evidence of damage to cell tissue and DNA. In one of such studies,<sup>40</sup> it was revealed that:

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37 Atili, (n 29).

38 Ibid.

39 N Cherry, 'Criticism of the Health Assessment in the ICNIRP Guidelines for Radiofrequency and Microwave Radiation (100 kHz – 300 GHz)' (2002) 1,129 <[http://researcharchive.lincoln.ac.nz/bitstream/10182/3933/1/90\\_m4\\_EMR\\_ICNIRP\\_critique\\_09-02.pdf](http://researcharchive.lincoln.ac.nz/bitstream/10182/3933/1/90_m4_EMR_ICNIRP_critique_09-02.pdf)> accessed 29 August 2014. Dr Neil Cherry was a biophysicist and an associate professor of Environmental Health at the Lincoln University in New Zealand. See European Union, 'Risk Evaluation of Potential Environmental Hazards from Low Frequency Electromagnetic Field Exposure Using Sensitive In Vitro Methods', a project under the programme "Quality of Life and Management of Living Resources" (2004) <[http://ec.europa.eu/research/environment/pdf/env\\_health\\_projects/electromagnetic\\_fields/e-reflex.pdf](http://ec.europa.eu/research/environment/pdf/env_health_projects/electromagnetic_fields/e-reflex.pdf)> accessed 1 August 2014; H Eger and others, 'The Influence of Being Physically Near a Cell Phone Transmission Mast on the Incidence of Cancer' (2004) 17 *Umwelt Medizin Gesellschaft* 1 <[http://www.powerwatch.org.uk/news/20041118\\_naila.pdf](http://www.powerwatch.org.uk/news/20041118_naila.pdf)> accessed 30 July 2014.

40 Institute of Research, 'Biological Effects of Electromagnetic Fields on Humans in the Frequency range of 1 to 3 GHz' Berlin in Rogers (n 28).

During the first 3 – 5 years of exposure, people suffer sleep disorders, melatonin reduction which leads to immune deficiencies. From 5–7 years, neurological problems become noticeable with headaches, confusion and memory loss. After 10 years, serious disorders such as cancer occur and health damage becomes irreversible.

Likewise, a report from the University of Washington states:<sup>41</sup>

When considering the health effect of radiation from wireless transmitters, one has to consider the effect of long-term exposure. People, who live, attend school, or work close to transmitters, are constantly being exposed to the radiation for months or years. Even though the level is low, it would matter if the effects of radiofrequency radiation turn out to be cumulative. Small doses cumulate over a long period of time (i.e. add up over time) will eventually lead to harmful effects. Therefore, exposure of the general public to radiofrequency radiation from wireless transmitters should be limited to a minimal level.

Radiation has also been linked to brain tumours, depression, miscarriage, Alzheimer's disease, and other deadly illnesses.<sup>42</sup> Children are said to be at the greatest risk because of their special vulnerability during periods of development before and after birth.<sup>43</sup> Over 100 physicians and scientists at Harvard and Boston University Schools of Public Health have called cell towers a radiation hazard while 33 delegate physicians from seven countries have declared cell phone towers a 'public health emergency'.<sup>44</sup> Cell phone towers expose the public to involuntary, chronic cumulative radiofrequency radiation.<sup>45</sup> Harmful low levels of radiation can reach as far as a mile away from the cell tower location.<sup>46</sup>

In addition to the effects on humans, studies have found that animals are also affected by emissions from telecom facilities. One of such studies

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41 Letter from H Lai, a professor of research in the Department of Bioengineering, University of Washington to the public (13 September 2004) <[www.Salzburg.gov.at/henrylailetter-spt132004.PDF](http://www.Salzburg.gov.at/henrylailetter-spt132004.PDF)> accessed 30 August 2014.

42 SJ Genuis (n 29), 3-5; Rogers (n 28).

43 L Kheifets and others, 'The Sensitivity of Children to Electromagnetic Fields' (2005) 116 *Pediatrics* 303.

44 *Ibid.*

45 M Kauppi, 'No Place to Hide' (Resolution at International Conference on Cell Tower Siting, Salzburg Austria, June 2000). It was signed by 19 of 23 speakers.

46 *Ibid.*

was on cattle.<sup>47</sup> When the cattle are kept close to a base station, researchers recorded reduced milk yields, emaciations, spontaneous abortions, abnormal behaviour patterns, conjunctivitis, heart failure and still births. When cattle were moved away from the base station, their condition and milk yields improved. The severe symptoms reappeared when the cattle were moved back to their original field beside the base station. The symptoms only appeared when microwave transmitters were added to an existing television transmitter. The researchers also report the profound effects experienced by the farmer (owner of the cattle) and his family since the microwave transmitters were installed.<sup>48</sup> Still yet, there are those who opine that studies have not confirmed nor refuted these claims.<sup>49</sup>

Besides emission of radiations, there is also the problem of heat from the transmitters, smoke and noise emanating from the generator sets that power these facilities. Heating effects become insignificant when distance from a microwave transmitter exceeds a few metres.<sup>50</sup> However, it's been established that a bird perching on a phone transmitter would feel the heating effect very quickly.<sup>51</sup> With the way telecom masts are sited in Nigeria, it is uncertain how much of the heat residents suffer from. Undoubtedly, the smoke and noise is an aspect Nigerians are familiar with. According to the matriarch of the Ogundipe family whose story was recounted above, her ailment started from heavy smoke emanating from the generator powering the mast near her house.<sup>52</sup> This writer is aware that a relative residing in Lagos state has constantly complained that smoke from a generator powering a mast belonging to one of the telecommunication companies has been posing serious health hazards to herself and her family members. The whole family is battling with respiratory problems right now. To make matters worse, this relative in question is asthmatic. Despite her various complaints, the

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47 W Löscher and G Käs, 'Conspicuous Behavioural Abnormalities in Dairy Cow Herd near a T.V. and Radio Transmitting Antenna' (1998) 79 *Pract Vet Surg*. 437. See also A Balmori, 'Possible Effects of Electromagnetic Fields from Phone Masts on a Population of White Stork' (2005) 24 *Electromagnetic Biology and Medicine* 109.

48 *Ibid.*

49 National Institute of Environmental Health Sciences/National Institute of Health, 'Assessment of Health Effects from Exposure to Power – Line Frequency Electric and Magnetic Fields' (1998), a Working Group Report, North Carolina, U.S.A <[www.niehs.nih.gov/health/assets/docs\\_a\\_e/emf1.pdf](http://www.niehs.nih.gov/health/assets/docs_a_e/emf1.pdf)> accessed 18 August 2014. See also Scientific Committee on Emerging and Newly Identified Health Risks (SCENIHR) 'Health Effects of Exposure to EMP' (2009) European Commission Committee <[http://ec.europa.eu/health/ph\\_risk/committees/04\\_scenihhr/docs/scenihhr\\_o\\_022.pdf](http://ec.europa.eu/health/ph_risk/committees/04_scenihhr/docs/scenihhr_o_022.pdf)> accessed 27 May 2014.

50 D Ford, 'The Effects of Microwave Radiation from Telecommunication Base Stations' <[http://www.tetrawatch.net/papers/ford\\_tower\\_report5.pdf](http://www.tetrawatch.net/papers/ford_tower_report5.pdf)> accessed 27 May 2014.

51 *Ibid.*

52 'Dangers of Telecom Masts' (n 35).

authorities have not deemed it fit to act on them.

It is for the foregoing reasons that telecom operators are required to site towers and masts a distance away from buildings and ecologically sensitive areas.

## 5. HARMONISING THE REGULATIONS

From the provisions of NESREA's Regulations and NCC's guidelines, it is clear that both agencies recognise that there is a level of impact telecom facilities have on human health and the environment. NESREA's position is that a five metre set back of masts is too close to residential buildings, hence its stipulation of a minimum of 10 metres set back. NCC's position is that since there are claims of empirical evidence showing that the radiation from a telecommunications mast is less than that emitted by television sets, the NCC's set back rule of five metres is justified.<sup>53</sup>

In view of the varied opinions on the effect of EMF or radiation on human health, the question that needs to be answered is, which of the two distances can be regarded as being safe for Nigerians and which, if employed, will not adversely affect the operations of the telecom operators. Granted that WHO has said that research has not been able to prove claims of EMF having adverse health effects and some others have said the effect of emissions from telecom masts is not known yet with certainty, we are of the opinion that the likelihood of causation is high. Some of the studies referred to in this work cannot be jettisoned in their entirety, as the empirical evidence is quite substantive. Cherry rightly observed in his 158 page report that to claim that there is no adverse effect from phone towers flies in the face of a large body of evidence.<sup>54</sup> He reports that there is no safe level of electromagnetic radiation.

While the science world is still searching for concrete answers, we caution that NESREA and NCC err on the side of conservatism so as to safeguard the health of Nigerian citizens and their environment. Both agencies need to adopt the precautionary approach. The precautionary principle (or precautionary approach as some others prefer to call it) means that lack of full scientific evidence should not be used as a reason for postponing measures to prevent environmental degradation.<sup>55</sup> As Thornton and Beckwith rightly pointed out,

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<sup>53</sup> This was the argument put forward by Dr Eugene Juwah, the Executive Vice Chairman of NCC. See A Adeyemi (n 7).

<sup>54</sup> N Cherry (n.42), 129.

acting in accordance with the principle is justified on the basis that the damaging effects of human activities may become irreversible before the scientific community can agree about the precise nature of those effects.<sup>56</sup> Forestalling disasters usually requires acting before there is strong proof of harm.<sup>57</sup> What if radiations from these telecom towers truly cause all the health problems discussed above? Would waiting for scientific certainty not result in some irreversible health problems? If we were to overlook seemingly low or weak radiation emissions which may later prove to be unsafe, would some Nigerians not be subjected to unnecessary suffering and avoidable deaths in years to come?

According to Okoye, though research conducted by international experts on the adverse effect or health hazards of situating telecom masts and towers in Nigeria has so far proved negative, NCC must ensure that the masts are not situated close to school premises.<sup>58</sup> She said this in view of the fact that studies have proved that the younger population is easily affected by radiation emissions from any available source.<sup>59</sup> She therefore advised NCC to compel service providers that have masts located near or within school premises to dismantle such masts as a matter of urgency. To buttress this point, Professor Henry Lai of the University of Washington said:

It is common sense to keep children out of harm's way. Therefore, if there is a possibility of harm, even not proven conclusively, a precautionary approach should be taken, and antennas should be placed as far away from schools as possible.<sup>60</sup>

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55 The precautionary principle aims to provide guidance in the development and application of international environmental law where there is scientific uncertainty. The core of the principle, which is still evolving, is reflected in Principle 15 of the Rio Declaration. See C Raffensperger and P Defur, 'Implementing the Precautionary Principle: Rigorous Science and Solid Ethics' (1999) 5 *Human and Ecological Risk Assessment: An International Journal* 933. For a deeper understanding of how the legislature or policy makers can apply the precautionary principle, see A Holdway, 'Reducing Uncertainty: The Need to Clarify the Key Elements of the Precautionary Principle' [2008] *Consilience Journal* 1. Some have argued against the adoption of the precautionary principle for reasons of vagueness, incoherence and adverse effects, for a response to these objections, see M. Ahteensuu, 'Defending the Precautionary Principle Against Three Criticisms' (2007) 11 *Trames* 366.

56 J Thornton and S Beckwith, *Principles of Environmental Law* (Sweet & Maxwell 2004) 1,13.

57 D Gee and S Vaz, (eds) 'Late Lessons from Early Warnings: The Precautionary Principle 1896–2000' (2001) Environmental Issue Report No 22, a research sponsored by the European Environment Agency, Copenhagen 13 <[http://www.eea.europa.eu/publications/environmental\\_issue\\_report\\_2001\\_22](http://www.eea.europa.eu/publications/environmental_issue_report_2001_22)> accessed 29 August 2014.

58 M Okafor, 'Allaying Fears of Radio Frequency Emissions', *Nigerian Newsworld* (8 July 2012) <<http://www.nigeriannewsworld.com/content/allaying-fears-radio-frequency-emission>> accessed 21 August 2012.

59 *Ibid.*

60 Henry Lai (n 42).

This is the same approach adopted at the international level. In December 2007 and June 2008, the International Commission for Electromagnetic Safety (ICEMS<sup>61</sup>) and 47 scientists who were signatories to the Benevento Resolution<sup>62</sup> stated in the follow-up Venice Resolution that ‘... we are compelled to confirm the existence of non-thermal effects of electromagnetic fields on living matter, which seem to occur at every level of investigation from molecular to epidemiological...’ and urged the immediate adoption of precautionary measures to protect the public.<sup>63</sup>

The implication of the foregoing is that the farther distance for set backs in the siting of base stations should be adopted as the Agencies and the legislature seek to review the conflicting regulations. Consequently, we submit that of the two positions, NESREA’s regulation of 10 metres set back is more favoured. Adopting this standard will also make it easier for the operators to comply with the provisions of the two agencies with respect to heat, smoke and noise emitted by generators powering the telecom masts.<sup>64</sup>

Difficulty however arises when cognizance is given to the evolving demographics over the 25-year life span of a tower or mast. Telecom operators have reasonably argued that areas that were initially sparsely populated could easily become densely populated over time leading to the violation of requirements, such as the 10 metre set back distance and height specifications for towers and masts.<sup>65</sup> They complained that in many instances, operators are unable to comply with the proposed set back of 12 or 10 metres

61 ICEMS is a non-profit organisation that promotes research to protect public health from electromagnetic fields and develops the scientific basis and strategies for assessment, prevention, management and communication of risk, based on the precautionary principle.

62 This resolution was first issued in September 2006 and was followed by the Venice resolution initiated in June 2008. These Resolutions are signed by scientists, engineers and medical doctors who have been doing EMF research and working internationally on electromagnetic fields health and safety. The combination of their training, experience and the many contributions they have made in conducting and publishing, represents hundreds of years of expertise and places them at the forefront of knowledge about EMF.

63 The Venice Resolution <<http://www.icems.eu/resolution.htm>> accessed 29 August 2014. See also L Guiliani and M Soffritti, ‘Non Thermal Effects and Mechanisms of Interaction between EMF and Living Matter: A Selected Summary’ [2010] 5 *Ramazzini Institute, European Journal of Oncology* 15.

64 NCC Guidelines 2009, s.3 (3) stipulates that all towers sited within residential areas must conform to the set back stipulated in the Guidelines and section 9 (9) to mitigate the effect of heat, smoke and noise pollution arising from generating sets. See s. 13(6)(a) also which states that all generators within a base station must be sited 5 metres away from all demised properties excluding the fence (b) All generating sets must be sound proof

(c) All generating sets must be installed on good shock absorbers so as to minimize vibrations to the barest minimum (d) The exhaust of all generators must not be directed towards any demised property. See NESREA Regulation 2011, reg 9 for NESREA’s provision on the use of generators.

65 ALTON’s Submission (n 30), 3.

from the wall of residential premises, schools and hospitals.

With respect to height specifications of masts, which is directly linked to the set back required, s.3 (4) of the NCC Guidelines 2009 states that towers to be sited around residential areas should not exceed 25 metres in height. However, s.3(5) of the same Guidelines stipulates that such towers can be allowed as long as they are placed at a minimum set back of 5 metres distance from the nearest residence. The argument of the telecom operators in this regard is that given the peculiarities of Nigeria and the lack of proper development and planning in most parts of the country, they are faced with severe constraints in attaining the said set back of 10 metres.<sup>66</sup> It is common knowledge that this is particularly so in high density areas of most towns and cities. Yet, no law prevents the building of residential and other premises within any designated range of telecoms and other infrastructure.

The question the operators are then asking is: would operators be required to remove lawfully sited towers and masts found to be in contravention of the Regulations where the neighbouring premises are built after the installation of the infrastructure?<sup>67</sup> This is a pertinent question which the Agencies and the legislature cannot ignore as they seek to review the relevant laws. In Nigeria today, it is difficult to designate any area as strictly commercial/industrial or strictly residential. The reality is that most areas are mixed commercial and residential as areas that were previously designated commercial/industrial have been encroached upon in the process of development; while some that are designated as residential, have been turned into commercial/business districts.<sup>68</sup> We therefore understand the difficulty of the operators. What this translates to is that town planning and other relevant laws must also be revisited, otherwise, after the NESREA and NCC regulations are reviewed, telecoms operators may still be unable to comply. Such a situation will engender difficulty in the enforcement of those regulations thereby defeating the purpose of their review.

We are mindful of the fact that the House of Representatives has approved a Bill seeking tougher action on the location of telecommunication masts by telecommunication companies amid health concerns discussed above.<sup>69</sup> The primary objective is to establish a framework within which

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66 Ibid.

67 Ibid.

68 An example is the Victoria Island in Lagos. Wuse 2 in Abuja is also evolving into a commercial district.

69 Telecommunications Masts and Associated Facilities (Location, Co-Location and Infrastructure Sharing) Bill, 2011.

telecommunications masts and related network facilities may be installed. The bill proposes to clamp down on the indiscriminate location of masts and electric power lines, particularly around residential areas. The Bill is awaiting necessary legislative work for its passage. As laudable as the intentions of the House of Representatives may be for proposing the Bill, we caution against the promulgation of multiple laws and regulations regarding this singular issue. Since there are agencies tasked with the responsibility to regulate the activities of the telecommunication sector, they should be allowed to discharge such responsibility without interference. The House of Representatives can assist them by ensuring that it adopts a holistic approach in reviewing the relevant regulations and laws as enunciated above, so that the agencies can be poised to effectively discharge their responsibility.

## 6. CONCLUSION

The safety of Nigerians should rate high on the priorities of all stakeholders. Economic development and the protection of the environment need not be antagonistic of each other, they can be symbiotic. Development of telecommunications systems will no doubt enhance economic development, however in doing so, the well-being of humans and the environment must not be undermined. That is the essence of sustainable development. Having learnt about the hazards or likely hazards of electromagnetic radiations, the government and the agencies can use this knowledge in taking action to better protect the environment and the health of species and ecosystems that are dependent on it; notwithstanding the existing conflicting scientific reports on their effects.

As earlier stated, postponing action on the reports linking EMF/RF radiations to health problems until the scientific community agree on such causal relationship may cause irreversible damage to public health and the environment. Likewise it will not be to the advantage of the Nigerian society for NCC to insist on a five metre set back only because it believes that the radiations are not harmful to human health. It is therefore imperative that NCC reviews its regulations and guidelines by adopting the 10 metre set back distance for the siting of telecom masts instead of the five metre set back distance presently in its regulations. This will bring them in harmony with NESREA's extant regulations. This seems to be the rational option since scientists have explained that waves or rays of energy are released outward from radio emitters and power devices but the intensity of the field of exposure drops off with increasing



distance from the source.<sup>70</sup> Therefore, it is only prudent for the agencies to adopt the farther of the two distances in implementing the precautionary principle.

Furthermore, in order to engender successful enforcement of and compliance with the reviewed regulations, the legislature will also need to review the town planning laws in order to address the problem of encroachment on areas within the designated range of telecom infrastructure as a result of change in demographics. For instance, such review should restrict development around areas with already installed telecom masts and telecom operators should be made to install their masts in appropriate places.

This paper did not set out to address all the issues regarding the role of NESREA and NCC in the telecom sector, it was only concerned with recommending a possible solution to the confusing provisions in the regulations of the two agencies with regard to set back distances for the sighting of telecom masts. We believe that has been achieved. Consequently, a question that may arise from this paper which will be left for further research is: which of the agencies should enforce the set back distances being proposed in this paper and other related provisions? The question becomes relevant in view of the struggle for enforcement earlier alluded to in this work that resulted in the sealing and unsealing of telecom infrastructure by both agencies. In the meantime, the Senate is enjoined to expedite action on the review of the NESREA and NCC Acts as it has decided. The review may well answer the question without the need for further research.

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70 SJ Genuis (n 29).