Environmental Resource Management, Conservation and Protection in the Global Emerging Innovative Technology for Sustainable Development – Deconstructing a Pathway for Nigeria

Being Keynote Lecture Delivered at this 33rd Annual Conference/General Meeting of the Nigerian Environmental Society (NES)

by

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I. Introduction

1. Excellencies, esteemed delegates, ladies and gentlemen, good morning. I am deeply honoured to deliver the Keynote Address at this 33rd Annual Conference/ General Meeting of the Nigerian Environmental Society (NES), aptly titled "Eko 2024." This year's theme, ***Environmental Resource Management, Conservation and Protection in the Global Emerging Innovative Technology for Sustainable Development,*** reflects the pressing challenges and opportunities of our time. NES has undeniably established itself as a powerful advocate and leading voice in the mission to safeguard Nigeria's environmental health. As an influential body and catalyst for change in the environmental sustainability, NES has consistently succeeded in bringing together diverse voices from the private sector, government, civil society, and development agencies. Through these collaborative efforts, NES drives critical initiatives and partnerships essential for Nigeria to forge actionable strategies toward a sustainable and equitable environmental future. This event is one of such impactful collaboration.

2. I am honored to share my thoughts with this distinguished audience this morning. I extend my sincere gratitude to the National President of NES, Dr. Efegbidiki Okobia, his executive team, all NES members, and my friend and colleague Dr. Eugene Itua, along with the Local Organizing Committee, for making this possible. Over the next two to three days, leading scholars, professionals, environmental practitioners and distinguished speakers will present compelling case studies and actionable insights through presentations, engaging panel discussions, and tailored networking events. These interactions will create opportunities for innovative partnerships across the conference's identified sub-themes, paving the way for opportunities that, in the coming months, will ultimately contribute to achieving the Sustainable Development Goals (SDG).

3. The conference sub-themes serve as gripping reminders of the shared ambition and commitment that must continue to drive us all in our mission to protect the environment. Environmental protection is not just a cause for its own sake- it is an

existential imperative that demands action. Complacency is therefore not an option in this crucial fight. Our communities and cities continue to bear the brunt of the consequences of inadequate and inefficient resource management; lack of accountability in environmental evaluation and monitoring; escalating urban air pollution and mining challenges; flawed urban planning; inappropriate environmental valuation; limited public participation in disaster risk reduction initiatives; growing water scarcity and food insecurity; loss of biodiversity; relentless deforestation, desertification, land degradation; and poor waste management.

4. Nigeria is not immune to the harsh, escalating consequences of climate change. Thankfully, with this audience, I need not argue its reality or the urgency of addressing it—the effects of climate change are undeniable. They are already upon us and intensifying. The most recent report from the Intergovernmental Panel on Climate change has again emphasized the devastating implications of global warming. Climate change is exacerbating other environmental challenges, and recent reports of devastating impacts, both within Nigeria and beyond, underscore the enormity of this defining challenge of our time.

5. Distinguished ladies and gentlemen, permit me to step away from the routine issues we are all familiar with. Some of the recurring concerns that I can conveniently focus on are: review and enhancement of existing environmental laws to align with global best practices; stronger commitment to enforcing regulations on resource management, pollution control, and conservation; advocating for policy development that integrates innovative technologies for environmental protection, with particular emphasis on their role in achieving the Sustainable Development Goals; and, importantly prioritizing policies that promote the adoption of renewable energy sources - solar, wind, and hydro-electric power - to reduce Nigeria's reliance on fossil fuels and aid the transition to a low-carbon economy.

6. In addition to the above, I could emphasize the potential of green technology to reduce industrial waste, boosting energy efficiency, and encourage eco-friendly business practices. I can also recommend policies aimed at strengthening resilience against climate-related disasters, especially in vulnerable sectors such as agriculture and coastal communities. Integrating climate risk assessments into national and regional planning processes; and developing stronger policies to sustainably manage Nigeria's natural resources, particularly in forestry, fisheries, and mining. I can similarly recommend policies that encourage recycling, reduce

plastic waste, and promote a circular economy; advocate for investments in modern waste management technologies and infrastructure; push for enhanced public awareness and education; active participation in global environmental initiatives and partnerships that offer technical and financial assistance. Finally, I can stress the need for a framework that ensures transparency and accountability in the use of environmental funds.

7. A number of the solutions above outlined are already in place and are being implemented in various forms. The implementation will continue because they remain essential to environmental sustainability. However, I strongly believe – though regrettably - that they alone may not be sufficient to shield Nigeria, and by extension –Africa, from environmental threats, as I will demonstrate throughout my remarks. My approach this morning, therefore, will be that of a practitioner who leveraged academia not only to inform, but also to critically reflect on the core principles of policy-making.

8. In one of the paragraphs of the invitation I received from the organizers, they highlighted: '*The theme aims to examine realities, alignments and contradictions in the global action to limit environmental degradation and its implications for sustainable development in the global south.'* It is within the context of the words, that I have chosen to interpret and interrogate the theme and sub-themes of this conference, which deliberately have been tied around global emerging innovative technology for sustainable development.

9. What are the key questions and issues that the organizers aim to address through this conference? A brief overview of where we have come from and where we stand today will help set these matters in the right perspective. Allow me to outline them briefly as follows:

   (i) Since the concept of environmental sustainability emerged, the central contention has consistently been how to balance economic growth with ecological integrity. The economy depends on the environment for both material inputs and outputs, as well as sustenance of society itself. The environment provides the essential ecosystem services that are critical for sustaining ongoing economic activity;

   (ii) The Global North rose on the back of carbon-intensive industrialization models, establishing itself as today's economic power bloc of the world. This

development has contributed to reduced infant mortality and increased life expectancy. In contrast, nations of the Global South continue to battle low levels of economic and industrial development. For many, extreme poverty is a daily reality, marked by low standards of living, limited opportunities and poor health conditions.

(iii) Then emerged the compounding challenge of climate change, disproportionately impacting the economy of developing countries. Countries like Nigeria, which depend heavily on raw material extraction, including agriculture and fossil fuels, have become more vulnerable to both climate related and transition risks, further intensifying their existing challenges.

(iv) Today there is an aggressive global call for decarbonization. Countries of the Global North have both the financial resources and technological capacity to adopt climate-compatible industrialization models. Developing countries, however, face significant challenges in doing so due to their limited pre-existing capabilities;

(v) If Africa were to fully utilize its known natural gas reserves, studies estimate its share of global emissions would increase only slightly, from 3 to 3.5 percent. However, while developing countries are urged to keep fossil fuels in the ground, countries considered leaders in climate finance continue to extract some of the world's most carbon-intensive petroleum.

10. These points raise probing issues. In the face of the disturbing historical dynamics, particularly the disturbing challenges confronting the Global South, including Nigeria, what are the viable options for managing environmental resources? How can conservation and protection efforts be strengthened? And what hope lies in emerging global innovations technology for sustainable development?

11. In 2015, world leaders united to make a historic commitment to urgently secure the rights and well-being of all individuals on a healthy and thriving planet. The Agenda 2030 for Sustainable Development, which was adopted during the gathering, serves as the global roadmap for ending poverty, protecting the planet and tackling inequalities. The 17 Sustainable Development Goals (SDGs) which serve as the cornerstone of the agenda are aimed at addressing the causes of violent conflict, human rights abuses, climate change and environmental degradation. It was hoped that the SDGs will integrate economic growth, social

well-being, and environmental protection in such a way that no one will be left behind. Nine years after adopting the SDG Agenda, with less than seven years remaining, the stark reality is that only 15 percent of the 140 SDG targets are on track to be achieved. Conflicts are escalating, and climate change, poverty, and inequalities continue to worsen.

12. Numerous pathways - encompassing robust international standards, guidelines and best practices - have been consistently proposed for countries to adopt and incorporate into their national systems. Many of these approaches are promoted as capable of facilitating the concurrent achievement of the SDGs within the context of a renewed global partnership that give priority and new spirit to solidarity, cooperation and mutual accountability. It is within this context of green economic transformation that we must begin the probe of our questions regarding environmental resource management, conservation and protection, and the role of emerging global technologies in sustainable development.

II. **The Slippery Slope of International Standards and Best Practices**

13. We are clear about what we do not have as options. Evidence-based scientific research has shown that the carbon-intensive industrialization models which hitherto served the Global North and contributed significantly to the 'miracle' of east Asia is no longer an acceptable pathway to sustainable growth. If anything, it is resulting in a series of catastrophic emergencies, and pushing our world to the brink of ecological disaster. To prevent another collapse of civilization, there is global consensus that we must avoid unsustainable overconsumption, transform our transportation system, reduce energy consumption, switch to zero-carbon and renewable energy sources, invest in reforestation, prioritize ethical investments, comprehensively scale up disaster and climate risk management, and adopt environmental regulations and sustainable trade standards, among other critical actions.

14. Some of these highlighted models are backed by persuasive regional and international soft laws or binding legal frameworks, encouraging state parties to commit to these standards and practices. Many of the models emphasize the need to take into consideration requisite local context and circumstances, as well as strategic thinking and planning, in order for the tools and mechanisms of the models to work effectively. When the adoption of a model is binding, any deviation triggers corrective mechanisms, which may include sanctions and prohibitions.

Based on the premise that these are international standards, guidelines and best practices, the assumption is that they have been mutually agreed upon by all parties and will produce beneficial outcomes when adhered to. How realistic is the assumption of agreement? How effective have been the outcomes for developing nations and emerging economies of the global south? How clear is the global South as to the way forward?

15. In many developing nations and emerging economies, we must admit that inefficiencies often stem from systemic issues, including corruption and the appointment of unsuitable persons to sensitive and critical positions. We must also acknowledge that, too often, best practices of green strategies are imitated but implemented half-heartedly and unfaithfully, resulting in what can be termed significant 'successful failures.' For instance, Nigeria has developed ambitious policy frameworks and implementation strategies, including the Nationally Determined Contribution (NDC) and the National Adaptation Plan (NAP) Framework which have well-structured approaches for mainstreaming adaptation across all spheres of governance. The question, however, is: how effectively has Nigeria implemented these frameworks? For instance, what reliable data do we have to enable us benefit from the loss and damage fund? How faithful have we been to conducting comprehensive national stock takes? How prepared are we to engage meaningfully at international climate meetings? And how thoroughly have we operationalized the Climate Change Act, intended as the base of Nigeria's climate actions? Numerous related questions like these merit our examination.

16. Beyond Nigeria's approach—and similar attitudes in many Global South countries—how compatible are current international best practices with the developmental stages, competencies, and capacities of the developing world? If the developing world is to avoid repeating past industrial policy errors, how well is the existing global system positioning them to benefit from new models of development that have been posited as the fountain of green economic opportunities?

17. The widely accepted, though often rhetorical understanding is that green industrialization - rooted in decarbonization – provides a myriad of opportunities. The stated socio-economic benefits include employment generation, reduced economic susceptibility to fluctuations in energy prices, improved energy efficiency, opportunities for industrial development as a result of expansion of low-carbon technologies, reduction in costly-to-treat waste, improvement in air quality, and overall sustainable development of communities. In reality, however, what has

happened and is still ongoing is that the benefits of low-carbon transition continue to favour the already industrialized economies. For instance, over 42 per cent of renewable jobs are in the European Union, the United States of America, China, India and Brazil. The African continent can only boast of about 2.4 percent of the jobs created in the sector.

18. If the premise of Agenda 2030 is to end poverty and promote peace and prosperity for all, why is it that countries of the Global South have remained stranded as victims of an uncontrollable force of economic stagnation? The answers, to my mind, are to be found in the core key enablers of low-carbon development, namely: the failure of international collaboration; the problem of technological innovation; and the challenge of digitalization. Let us briefly explore each of these enablers.

The Failure of International Cooperation

19. What climate change has demonstrated is that good intentions and slogans are poles apart from providing objective and realistic solutions to a problem. While the Paris Agreement calls for collaboration among all parties, the growing mistrust between developed and developing nations is ringing alarm bells, posing significant challenges to the international climate change regime. The core of the contradictions that have continued to undermine the new sustainability agenda, in my opinion, is that it is built on an entrenched system where intellectual, social, financial and economic rights are all structured and intended to protect, safeguard, control and maximize assets in its different forms.

20. The reality is also beginning to dawn on developing countries rich in critical minerals such as copper, lithium, nickel and cobalt, which are essential components for today's rapidly growing clean energy technologies. The significant R & D efforts of industrialized nations to generate alternative technologies that rely on substitute materials such as phosphate and hydrogen-based materials are already confronting them with the risk of economic uncertainty arising from technological disruptions. There are several other examples to support this position.

21. Of course, the developed countries also criticize the reluctance of developing countries, particularly major economies like China and India, to take responsibility for their increasing emissions. The core issue is that while the blame game continues at successive Conferences of Parties (COP), developing countries are left to confront the greatest risks and disastrous consequences of climate change. This

situation highlights the realities and contradictions of global climate governance and on its implications for the Global South.

The Problem of Technological Innovation

22. Economic growth in nations relies heavily on their capacity to harness knowledge, expertise and resources to develop innovative situations for societal problems, improve efficiency and drive progress. Research indicates that of all the pillars of economic growth, innovation stands out as the most significant driver.

23. What are the realities and contradictions in the global emerging innovative technologies for sustainable development? With respect to general environmental technologies such as pollution control, water pollution control, and solid waste management among others, the dominant countries are Europe, Japan, United Kingdom and the BRIC countries (Brazil, Russia, India, Indonesia, China, South Africa). In the case of renewable energy technologies, three-quarters of the patents originate from only four countries, namely, China, Japan, United States and Germany. They are also the highest exporters of low-carbon technologies.

24. Conversely, Africa, as previously mentioned, along with several other developing and emerging economies of the Global South, is increasingly becoming a dumping ground for obsolete environmental technologies and renewable energy technologies.

25. When a nation lacks the capacity to innovate its own technology and must rely on third party technologies, there are significant implications and consequences. In addition to the earlier mentioned challenges that such a nation will continue to grapple with, this situation can degenerate further and ultimately become an issue of national security. There are several ways this issue can manifest, and one example is in the agriculture sector. Genetically modified (GM) seeds can significantly enhance crop yields, reduce the need for pesticides and herbicides, and boost profits.

26. In the same vein, an uninformed and ill-regulated embrace of a third-party sponsored GM seeds can manifest significant problems. The biotechnology rights of seed owners as protected through patents and contractual agreements may prohibit farmers from saving seed and/or reusing them, thus making the farmers solely dependent on regular purchase of the third-party seed at prices dictated by

the third party. Some contracts may also bind poor indigenous farmers to arbitration clauses that bar them from seeking recourse in local courts, that may in deserving cases, look at fairness of contracts, as against the spirit of commerce that wholly dominate arbitration agreements. Most of such contracts also limit the liability of seed owners notwithstanding the damages that may arise from environmental issues, such as destruction of the identity of non-GM crops and organic crops; possible harm of GM seeds and crops to other beneficial organisms, and unknown potential health risks to humans in the context of allergens. All of these are further compounded by the unsatisfactory fragmented and uncoordinated regulatory framework that exists at many national levels.

27. In *Monsanto Company v. Schmeiser Enterprises Ltd,* a local farmer was sued by Monsanto for saving and planting GM seeds produced from pollen that had blown into his fields from a neighbouring farm. Schmeiser had no contract with Monsanto. The court found that the defendant planted seed saved from a field onto which pollen from GM canola had blown. The court found further that Schmeiser had engaged in these activities knowingly. This violated the patent Monsanto held on the Roundup tolerant seed. Mr. Schmeiser was ordered to deliver to Monsanto any remaining saved seed and also pay the profits earned from the crops, together with interest.

28. The reality for Africa and many developing and emerging economies of the Global South is that the current western Intellectual Property Rights regime and other international trade frameworks concerning genetic resources have negatively impacted traditional knowledge and indigenous peoples. These frameworks favour the industrialized North, and have already undermined the equitable distribution of the benefits of biodiversity. Building on this, multinational companies from the industrialized North continue to effectively use innovative R & D technologies in the agriculture sector to their economic advantage. Regrettably, some of these have the potential to compromise not just the food security of nations, but also the survival of the lifestyle and culture of indigenous and local communities.

The Challenge of Digitalization

29. Digitalization is the process of leveraging digital technologies to enhance processes and transform operations to provide new value-producing opportunities. I will not bore this great audience with what the digitalization phenomenon is or how it is unlocking vast amounts of knowledge and understanding in ways never before

possible. Artificial intelligence and other forms of automation have become the human reality and the new era of the knowledge economy. What is of more importance for interrogation is how well the countries of the Global South are preparing themselves for this rapidly changing landscape? How well are they investing in this future that demands a new breed of minds that are able to think critically, creatively and flexibly?

30. To put this in perspective, the Global South comprises approximately 134 countries across Central and South America, Africa, Asia and Oceania. While countries like China, India and Turkey have come to the realization that digitalization is not exclusive to the West, and are currently basking in the unique opportunities that it presents, the majority, particularly in Africa, continue to grapple with issues related to electricity and internet connectivity. Not only are they not sufficiently, effectively and adequately integrating digital skills training into education curricula, they are also not investing in local researchers.

31. The Kingdom of Wakanda in the great story of Black Panther is a fictional country. The city of Neom, on the other hand, is a futuristic region in Tabuk Province, Northwest Saudi Arabia. It's a visionary project that is set to transform the Red Sea Coast of northwest Saudi Arabia. It was launched in 2017 by His Royal Highness Prince Mohammed bin Salman, the crown prince and Prime Minister of Saudi Arabia, and the projection is that the city will be powered 100 per cent by renewable energy. The completion date is projected to be around 2039. Although Saudi Arabia is currently heavily reliant on oil, it is already actively redefining its future through investments in technology and tourism. Neom serves as an example of how a country can create a pathway for itself towards sustainable energy transition.

III. **Deconstructing a Pathway for Nigeria**

32. It would be an illusion to expect the anachronism and the predominance of self-interest observed among the enablers of law-carbon development to simply disappear. While the United Nations will undoubtedly achieve noticeable successes in negotiating international climate agreements at COP and other meetings, the foundational lack of justice and equity within existing international systems - and its ongoing influence on various models of global international partnerships and collaborations - will remain an indispensable factor in alignments. Recognizing that we are not competing on an equal footing and that entrenched unfair practices are often deliberate, Nigeria must address the critical issues of innovative technology

and digitalization if we truly seek to gain leverage in navigating the complexities and contradictions of international cooperation.

33. In today's knowledge economy, technology remains the critical pathways to environmental sustainability and climate resilience. For as long as Nigeria fails to effectively address these twin challenges, our conversations and strategies will remain centered on treating symptoms rather than the root causes that continue to expose developing countries and emerging economies to risk. What must Nigeria do to deconstruct our current approach and reinterpret it to achieve the desired goals? While there are no silver bullets to better prospects, we have the essential resources – a large, diverse population, a strategic geographical and regional position that can drive demand, and a talented, eager youth population ready to be harnessed.

34. For too long, Nigeria has been obsessed with the unending search for technology transfer often settling instead for foreign technologies. We assume that by engaging technology suppliers in a collaborative process, they will ultimately transfer ownership of these technologies to us. The approach challenges the settled logic that the driver of technology and innovation is neither emotional nor physical, but a business resulting from a third-party's huge investment in R & D activity. The implication is that no viable technology product or process will simply be handed over to us without substantial effort and negotiation. Nigeria urgently needs a radical shift away from disregarding the creative efforts of her geniuses and innovators, who are found across places like Alaba and other places in Lagos, Aba, Kano as well as other parts of Nigeria. We must proactively engage and support them, whether they operate in the formal or informal sectors. Evidence of their ingenuity is visible in institutions like the Federal Institute of Industrial Research (FIIRO), the National Agency for Science and Engineering Infrastructure (NASENI), innovation centers such as Innov8 Hub, and even displayed on platforms like TikTok.

35. Now is the time for Nigeria to take a bold, inward-focused approach to supporting these innovators by engaging experts who can help re-evaluate their value chains and models, aligning them to address specific sector and industry challenges effectively. This is the approach adopted by countries like India, Brazil and China to galvanize the success story of their technological break-through. For too long, we have merely paid lip-service to local content laws while channeling our financial and other resources to foster foreign expertise and capabilities. Embracing a 'learn-

by-doing' approach, and correcting mistakes along the way, can significantly address skills gap, align creativity with actual needs, and inspire others to follow suit. For lower-level technologies, Nigerians should be supported to venture into diverse fields. When it comes to more sophisticated technologies, however, it is crucial to strategically select emerging global fields where we can aspire to excel and aligning our efforts with our unique contexts and national priorities.

36. We must develop a consciousness for the strategies employed by relentless global competitors who intermittently donate money (in the form of Foreign Direct Investment) to enable us acquire their innovative technologies and services. Some of these Greek gifts are simply aimed at deepening our complacency and dependence on foreign solutions, while dampening our enthusiasm to support home-grown technologies. When we enthusiastically accept foreign funds to commercialize foreign technology in Nigeria, we risk entering strategic partnerships and alliances that divert our focus from intentionally encouraging and nurturing Nigeria's home-grown technologies. These approaches serve as shortcuts that are unlikely to position Nigeria as a global leader in advanced technologies.

37. What kind of support do we need for home-grown technologies to thrive? We must carefully and deliberately de-risk the various threats present across a wide range of policies, including fiscal, industrial, environmental, energy, labor, and skills policies. Nigeria must actively promote: proactive and well-funded R & D through knowledge institutions like universities, innovation centres, polytechnics and institutes of technologies; access to subsidized credit from national development banks; reliable and affordable electricity; substantial investment in infrastructure; public guarantees and risk insurance; incentives that can lower up-front costs, such as subsidies, grants, green bonds with preferential rates; policy consistency over the long-term; and long-term contracts with off-takers at guaranteed prices. The government should also work deliberately to remove barriers, improving coordination and aligning related policies to guard against inconsistencies and potential misalignments.

38. We must reorient and transparently monitor the organizational structures of relevant government agencies. In cases of malfeasance, system abuse and lack of accountability, those involved must face consequences. Without this accountability, the support mechanisms we have identified to support home-grown technologies will only serve to enrich elites, at the expense of the benefits intended for the country. The upcoming TETFund National Research Fair and Exhibition, scheduled

for November 17th to 22nd in Abuja with the theme "*Technologies for Massive Generation of Jobs and Wealth Creation Among Nigerians"* is a step in the right direction. The goal is not only to take stock of existing research outputs and technologies within Nigeria's formal and informal sectors but also to showcase these innovations to potential investors and entrepreneurs. Additionally, the initiative aims to provide access to financial institutions and intellectual property experts for support. So far, over 1790 submissions have been received from institutional and industrial-level innovators, alongside 623 from community-level innovators, all totaling 2413 entries. This initiative should become an annual event.

39. With respect to digitalization, a careful scrutiny of Nigeria's National Digital Economy Policy and Strategy reveals a document well-suited to fulfil its purpose. What is required now is a commitment and sincerity of purpose to ensure its success. Again, if we are bridge the digital divide, expand inclusion and benefits for all, and advance equitable and interpretable data governance home-grown, innovative technologies play a crucial role.

40. In closing, I reflect on the African Renaissance Retreat held in Kigali, Rwanda, from September 6th to 8th, 2024. The retreat brought together some of Africa's wealthiest individuals to engage in open and honest discussions about transforming the African continent. For Africa, the journey ahead is a collective one, and these group of influential individuals, alongside our political leaders, have a pivotal role in liberating the continent from dependency. It is time to set aside our prejudices and focus on those things that unite us. As long as African countries continue to operate in silos and overlook the need for genuine collaboration, they will struggle to realize their full potential.

41. I wish us all fruitful and productive discussions, and I thank you sincerely for your kind attention.

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