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Benefitting from Environmental Pollution through a Carbon Tax: The Nigerian Perspective

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Abstract

Although Nigeria contributes minimally to climate change, there is a need for government to embrace climate change policies to combat the potential adverse impact of climate change on food security, health, poverty reduction, inequality, as well as future economic growth and development. Carbon tax is one of the policies canvassed for in this regards. This study was undertaken to examine the benefits of the implementation of a carbon tax in Nigeria. Carbon tax has the potentials to not only reduce CO_2 emissions and reduce pollution but would increase government revenue, and put Nigeria on the path of achieving green development.

Keywords: Carbon tax, environment, pollution, Nigeria

Introduction

Environmental pollution has been one of the greatest problems confronting Nigeria and there is hardly any information regarding this. However, data collected by a few individuals and corporate organizations though not comprehensive enough, shows the hazard and deleterious effects of pollution on the ecosystems and people in the region. Increase in emission associated with greenhouse gas have grave consequences both on the climate and the environment. For example, the United Nations Environment Programme in its recent report presented a staggering fact, stating that pollution of the air, freshwater, oceans, and land kills more than 12 million

ISSN: 2278-4632
Vol-10 Issue-5 No. 18 May 2020

people every year-that is nearly one in four deaths globally. Pollution also threatens vulnerable wildlife and plants and can devastate the entire ecosystems. Further estimates show that each year over 6.5 million people die prematurely because of poor air quality, while some are attributed to indoor air pollution from cooking mostly in low and middle-income countries like Nigeria, quite a high percentage of these deaths are largely owed to respiratory infections caused by air pollution (Amusa, 2017). Also, it has been observed that about 600,000 deaths in Africa are traceable to poor air quality premised on air pollution resulting from carbon dioxide emission (Oyedepo, 2012). Nigeria with a population of over 180 million people and a status of developing nation is exploring every aspect of development in a great deal. Over 80 million Nigerians own either an electricity generating set or a means of transportation like automobiles (Igwenagu, 2016).Okeke (2018), posited that about 60 million Nigerians invested about N1.6 trillion to purchase and maintain standby generators annually according to statistics by the Centre for Management Development. These generating sets and automobiles all depend on fossil fuels for their operation. Nigeria's electricity consumption per capita is the lowest in Africa as over 80% of about 30 million households in the country lack access to electricity from the national grid (Ehirim, 2017). The economic implication of this amounts to about N9 trillion spent annually on fueling automobiles and generating sets as industrialization largely demands. Although Nigeria lacks any standard national emission inventory like developed nations, which shows the contributory indices of pollution sources and emissions, it is estimated that two of the main sources of carbon emission are generating sets and automobiles (International Trade Statistics (ITS), 2015). Figure 1 shows the sector-by-sector CO_2 emission in Nigeria with electricity contributing the highest amount (39.1%) of the total emission.

ISSN: 2278-4632
Vol-10 Issue-5 No. 18 May 2020

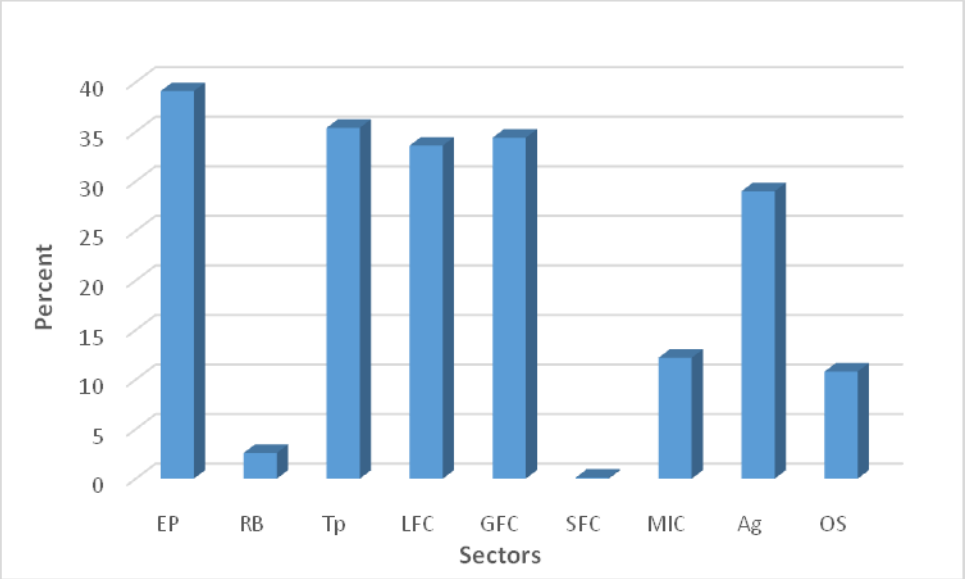

Fig. 1: Percentage sector contribution of CO_2 emission in Nigeria (2016)

Source: FAOSTAT, EPA and UNFCCC National Communication

Key

EP – Electricity Production

RB – Residential building

Tp – Transport

LFC – Liquid Fuel Consumption

GFC – Gaseous Fuel Consumption

SFC – Solid Fuel Consumption

MIC – Manufacturing Industries and Construction

Ag – Agriculture

OS – Other Sectors

ISSN: 2278-4632
Vol-10 Issue-5 No. 18 May 2020

The erratic and likewise epileptic megawatts of power generated fluctuates in Nigeria coupled with the huge sums on record to have so far been invested in the power sector leaves much to be desired. Due to the relative importance of power in contemporary urban society, a lot of homes generate their own power at least from electricity generating sets to meet their basic demands. The proliferation of electricity generating sets have grown to an alarming level due to the continuous dwindling power generation in the country. Indiscriminate use of generators and gas flaring by oil producing companies has also worsened situations of carbon emission in Nigeria. Although Nigeria CO_2 emissions fluctuated substantially in recent years, it tended to decrease through 1997 – 2016 period, reaching an all -time high value of 104,304.1mt in 2004 ending at 82,634.2mt in 2016 as shown in figure 2. This could be due to increase use of electricity generating sets by households and industries as the country witnessed the greatest shortage in power generation in 2004.

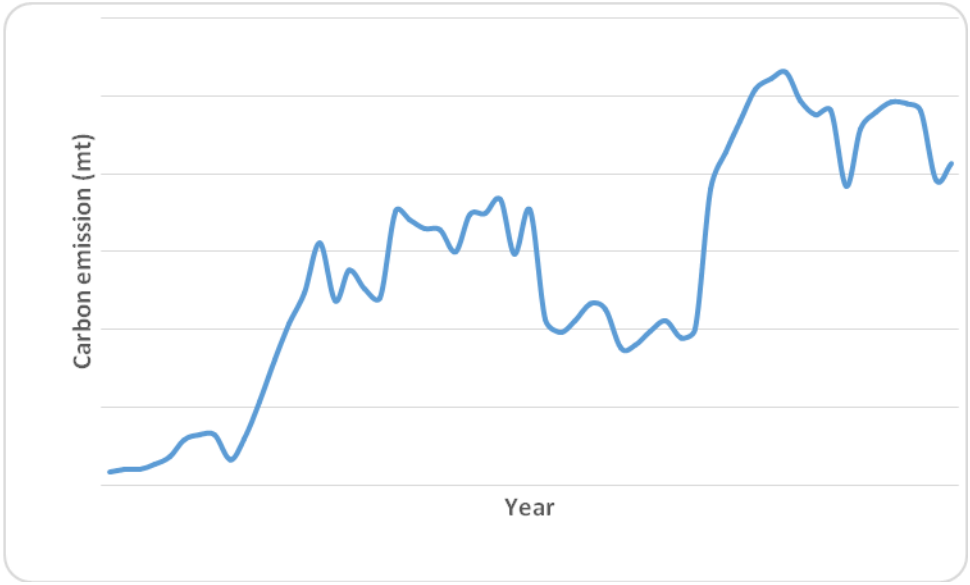

Fig. 2: Total carbon emission in Nigeria (million tonnes) (1960 – 2016)

Source: Trading economics

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Vol-10 Issue-5 No. 18 May 2020

The challenges posed by the emission of greenhouse gases and the worsening quality of the environment has become a growing concern to environmentalists and policy makers alike. In response to mounting scientific evidence that human activities are contributing significantly to global climate change, decision makers are devoting considerable attention to public policies to reduce greenhouse gas emissions and thereby prevent or reduce such change. The Intergovernmental Panel on Climate Change (IPCC, 2007) stated that the important anthropogenic greenhouse gases which can be traced to human activities include carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_4O), chlorofluorocarbons (CFCs), perflourocarbons (PFCs), and hydroflourocarbons (HFCs). Ghorbani, Koocheki and Motallebi (2008) noted that many countries of the world have entered into many international agreements including the Kyoto Protocol, which commits its Parties by setting internationally binding emission reduction targets. The Protocol places a heavier burden on developed nations as major emitters of carbon under the principle of "common but differentiated responsibilities". The Global Commission on the Economy and Climate recommends that all developed and emerging economies, and others where possible, commit to introducing or strengthening carbon pricing by 2020 and should phase out fossil fuel subsidies. Therefore, setting a price for carbon emission, either through a specific tax or the requirement to acquire a permit is necessary.

What is Carbon Tax?

A carbon tax is a tax specifically levied on the carbon content of fuels. It is usually designed in terms of currency per tons of CO_2, so it generates incentives to reduce carbon emissions in a Pigouvian sense. Since carbon is present in hydrocarbons (coal, oil and natural gas), the economic activities related to the extraction and use of these fuels are directly affected by such a tax, even though there are indirect effects throughout the economic system. The objective of a

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Vol-10 Issue-5 No. 18 May 2020

carbon tax is to reduce the levels of CO_2 emissions and to internalize a negative externality, like global warming and climate change. In this regards, the social benefits of this tax could exceed its costs. It is considered one of the best and most cost effective economic instruments for combating climate change (Baranzini, van den Bergh, Carattini, Howarth, Padilla and Roca, 2016). Most countries apply taxes on energy products or motor vehicles to tackle the problem of emissions, while others have implemented different forms of carbon taxes. In all these cases, the tax rates are diverse. World Bank reported carbon taxes range between US$1/tCO_2$ and $131/tCO_2$ in 2015. However, most of the values range between US$1/tCO_2$ and $26/tCO_2$ (World Bank, 2016).

Carbon tax is one of the policy instruments canvassed for the reduction of greenhouse gas emission (Bosquet, 2010). It refers to a tax on activities or production processes that can give rise to greenhouse gas emissions. The carbon tax system is anchored on the Polluter Pays principle which states that, National authorities should endeavour to promote the internalization of environmental costs and the use of economic instruments, taking into account the approach that the polluter should, in principle, bear the cost of pollution, with due regard to the public interest and without distorting international trade and investment (Akinwande, 2014). The goal of carbon tax is to reduce environmentally harmful behavior by ensuring that emitters of greenhouse gases bear the full costs of their actions. Carbon tax is expected to increase the cost of fossil fuel and subsequently influence organizations to switch to cleaner fuel, which is currently expensive, thereby forcing businesses and households to reduce energy use (Kaygusuz, 2012 in Fakoya, 2014).

Developed countries have since embraced carbon tax policy. For example, Sweden was the first country to introduce environmental tax reforms by implementing carbon tax in 1991 (Heady,

ISSN: 2278-4632
Vol-10 Issue-5 No. 18 May 2020

2002). The tax was originally imposed at a rate of about €43 per ton of carbon. The rates were increased to €100 and €106 per ton of carbon by 2007 and 2008 respectively. These reforms represented a key component in a broader tax-shifting operation that strengthened indirect taxes, particularly the Value Added Tax (VAT), and environmental taxes, and that reduced taxes on labour. The British Columbia (BC) government on the other hand imposed a carbon tax in 2008 on over 75 percent of the greenhouse gases emitted in the province as a means of reducing carbon dioxide emissions by 1/3 of their 2007 level by 2020 and to be 80% below 2007 levels by 2050. Norway and Finland introduced carbon tax in 1990 (Bovenberg, Lans and Mooij, 1994). Denmark started the implementation of carbon tax in 1992 (Greene, 2011). In Asia, Singapore was to commence the implementation of a carbon tax on the emission of greenhouse gases in 2019. These countries have benefitted from carbon taxation through the reduction of CO_2emissions and in most cases have experienced a raise in revenue (a double dividend).

Several African countries are implementing domestic carbon pricing mechanisms, with South Africa being one of the very few countries in Africa that have developed concrete plans to implement the carbon tax system. As an integral policy instrument for reaching South Africa's goal of reducing emissions by 34% below business-as-usual (BAU) by 2020 and by 42% below BAU by 2025, the tax was proposed to start at 120 Rand (approximately US $8.80) per ton of CO_2 equivalent in January 2017 and increase over time. The tax will promote crediting mechanisms by allowing covered entities to reduce their carbon tax liability by purchasing credits generated by South African projects that are verified under international standards. The draft South African Carbon Offsets Regulation indicates carbon offsets verified under the CDM, the verified Carbon Standard and the Gold Standard will be eligible for use in the programme.

ISSN: 2278-4632
Vol-10 Issue-5 No. 18 May 2020

Evidence has shown that setting a price on carbon emissions either through emissions trading or taxation; is considered an essential and the most effective policy tool for: minimizing CO_2emissions, raising revenue, controlling air pollution and mitigating anthropogenic climate change (Carbon Pricing Leadership Coalition, 2016; Parry *et al*., 2016; Baranzini*et al.*, 2016).

The case for carbon taxation in Nigeria

Carbon trading does not exists in Nigeria, neither is there any deliberate policy to introduce carbon tax as a means of reducing emissions. Carbon tax as a policy instrument when introduced, would help in regulating the effect of environmental pollution resulting from the activities of emission producing companies. The tax would encourage reductions in emissions of CO_2 and increase federal revenues, more so, as government seek alternative revenue sources in order to pay the proposed Thirty thousand (N30,000.00) naira minimum wage. Carbon tax would either tax those emissions directly or tax fuels that release CO_2 when they are burned (fossil fuels, such as coal, oil and natural gas). A low carbon strategy would position Nigeria as a regional and international leader on climate action. Adopting a low-carbon strategy in the power sector, for example, including energy efficiency, solar and wind energy; and combined cycle technology in gas-fired generation, could provide the electricity Nigeria needs to grow, but with cost savings in the order of 7% and avoiding the emission of close to 2 billion tons of CO_2 (Nwaichi and Uzazobona, 2011). In the oil and gas industry, a low-carbon strategy that focuses on reducing natural gas flaring and capturing the gas for commercial use (in the power and other sectors) could generate as much as US$7.5 billion in net additional gains. In all, this low-carbon scenario could generate net benefits in the order of 2% of GDP over 25 years (Nigeria Economic Review, 2016).

ISSN: 2278-4632
Vol-10 Issue-5 No. 18 May 2020

Benefits of a carbon tax

Recent decline in oil prices occasioned by the COVID 19 pandemic calls for diversification of the Nigerian economy towards lower carbon activities and energy sources. The implementation of carbon pricing will reduce dynamic efficiency: as it offers financial and economic incentives for emitters to invest in emission-reducing innovation and adopt new emission reducing technologies. When imposed, a carbon tax will not only influence a positive change among emitters to have a positive effect on climate change but will also correct the existing prices of goods and services that generate excessive levels of anthropogenic greenhouse gas emissions, so that it reflects the social costs of such emissions.

In line with the objective of the National Generator Emission Control Programme (NGECP) to address pollution from generator sources, the implementation of a carbon tax would enhance a cleaner environment to achieve at least 30% energy efficiency in houses, industries, homes etc, and in turn translate to economic growth.

Conclusion

Since Nigerian government has shown interest in pursuing a (lower carbon) sustainable development pathway, through its Intended Nationally Determined Contribution (INDC) on greenhouse emissions, concerted effort must be made to translate its INDC commitment into actions. Nigerian government should consider carbon tax as a policy instrument in reducing emissions and provide a revenue stream for the government, that when 'recycled' would finance transitional support measures and general government expenditure, or reduce distortive taxes (if there are any) such as payroll taxes. Such recycling of revenues would help to improve the efficiency of the carbon pricing instrument in managing the transition to a low-carbon economy (green economy).

References

Akinwande, G. (2014). The Prospects and Challenges of the proposed carbon tax regime in South Africa: Lessons from the Nigeria Experience. *Journal of Sustainable Development, Law and Policy*, 3(1): 177-188.

Amusa, T.O. (2017). The Role of the Forests in the amelioration of the Nigerian Environment, *The Nigerian Field*, 67: 31-43

Baranzini, A., Jeroen van den Bergh.,Carattini, S., Howarth, R., Padilla, E. and Roca, J. (2016).

Seven reasons to use carbon pricing in climate policy. Center for Climate Change

Economics and Policy. Working paper No. 253.

Bovenberg, A., Lans, A. and de Mooji (1994). Environmental Levies and Distortionary Taxes. *American Economic Review*, 84(4): 1085-1089.

Ehirim, N.C. (2017). Agricultural land use in peri-urban communities in Nigeria: A review, *International Journal of Tropical Agriculture and Food Systems*, 1(3): 262-266.

Environmental Protection Agency (United States), 2016 review.

Fakoya, M.B. (2014). Carbon Tax Policy Implications for Economic Growth and Unemployment Rates in South Africa: A Conceptual Thought, *Environmental Economics*, 5(3): 92-98.

FAOSTAT Nigeria (2017). Emissions by sector (CO_2 equivalent) Average 1990-2017. Retrieved from www.fao.org/faostat/en/country/159

Ghorbani, M, Koocheki, A.R. and Motallebi, M. (2008). Estimating the Greenhouse Gases

Emission and the Most Important Factors in Diary Farms (Case study of Iran). *Journal of*

Applied Science, 8(23): 4468-4471. Doi: 10.3923/jas.2008.4468.4471

Greene, W.H. (2011). Econometric Analysis, 5th Edition, 234-236, New York University.

Heady, C. (2002). Tax Policy in Developing Countries: What can be learned from OECD experience? A paper presentation at the seminar "Taxing Perspectives: A Democratic Approach to Public Finance in Developing Countries", at the Institute of Development Studies, University of Sussex, on 28-29 October, 2002.

Igwenagu, C.M. (2016). Trend Analysis of Rainfall Pattern in Enugu State, Nigeria, *European Journal of Statistics and Probability*, 4(2): 70-76.

Intergovernmental Panel on Climate Change (2007). Climate Change 2007: Impacts, Adaptation and Vulnerability. Contribution of Working group II to the fourth Assessment Report. Cambridge University Press, Cambridge, United Kingdom.

International Trade Statistics Yearbook (2015), Volume 1. Trade by Country.

Kaygusuz, K. (2012). Energy for Sustainable Development: A Case of developing countries. Renewable and Sustainable Energy Reviews, Elsevier, 16(2): 1116-1126. Doi: 10.1016/j.rser.2011.11.013.

ISSN: 2278-4632
Vol-10 Issue-5 No. 18 May 2020

Nigeria Economic Review. Second Quarter Report 2016. Africa Portal.

Nwaichi, E.O. and Uzazobona, M.A. (2011). Estimation of the CO_2 level due to Gas Flaring in the Niger Delta, *Research Journal of Environmental Sciences*, 5(6): 565-572. Doi: 103923/rjes.2011.565.572

Okeke, I.C. (2018). Implications of wetlands degradation for water resources management: Lessons from Nigeria, *GeoJournal*, 61(2): 151-154. Doi: 10.1007/s10708-004-2868-3.

Oyedepo, S.O. (2012). Energy and Sustainable Development in Nigeria: The way forward. *Energy, Sustainability and Society*, 2(15): 1-17. Doi: 10.1186/2192-0567-2-15.

Parry, I., Veung, C. and Heine, D. (2014). How much Carbon Pricing in Countries' Own Interest? The Critical Role of Co-Benefits. IMF Working Paper prepared, in parts as a contribution to the New Climate Economy project. International Monetary Fund, Washington, DC.

UNFCC (2015). United Nation Framework on Climate Change

World Bank (2015). State and trends of carbon pricing. World Bank publications

