



OPERATIONALIZING THE THEORY OF ENVIRONMENTAL EXTERNALITIES TO ASSESS SOCIO-ECOLOGICAL SUSTAINABILITY AND SURVIVAL OF COASTAL COMMUNITIES IN NIGERIA

FIE DAVID DAN-WONIOWEI

Abstract

This paper operationalizes the theory of environmental externalities to assess socio-ecological sustainability and the survival of coastal communities in Nigeria. It argues that petroleum exploitation activities of Multinational Oil Corporations (MNOCs) in the coastal and marine areas of the Niger Delta in Nigeria produce negative environmental externalities and impose them on the environment at the expense of the survival of the coastal communities as third parties. The paper adopts the library research technique for data collection, while the analyses were conducted in the realm of the theory of environmental externalities. In the end, the paper identifies the theory of environmental externalities as a veritable tool for demystifying the costs and benefits of petroleum exploitation in Nigeria. In the realm of the theory also, the paper was able to underscore the fact that the negative environmental externalities, which are outcomes of the petroleum exploitation activities in the coastal and marine areas of the Niger Delta in Nigeria to a large extent, negatively impact socio-ecological sustainability and the survival of coastal communities in the region. Consequently, the paper concludes that the negative spill-over effects of petroleum exploitation on the coastal and marine environment undermine socio-ecological sustainability and risk the survival of the coastal communities in the Niger Delta of Nigeria. Therefore, it recommends that the MNOCs, and the Federal Government of Nigeria (FGN), which are the benefiting parties of the petroleum industry in the country should be more liable and adequately, compensate the coastal communities for the spill-over effects of the petroleum exploitation activities in the region. In addition, vital ecological regions should be identified and mapped out as protected areas (PAs) to avoid overexploitation on one hand, and on the other hand, to conserve the natural ecosystem resources the coastal communities depend on for survival in Nigeria.

Keywords: Theory, Environmental Externalities, Socio-ecological Sustainability,

Survival, Coastal Communities.

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1. Introduction

Worldwide, different socio-ecological communities such as plants, animals, and a variety of organisms have lived, adapted, and survived in their different habitats – marine habitats such as oceans, rivers, and lakes, among others, and land habitats - forests, deserts, and mountains, among others for centuries (Feng & Squires, 2022). In particular, over 50% of the world's human population lives within 100km of the coast and depends on the natural coastal and marine ecosystems as primary sources for their survival (Feng & Squires, 2022). However, human industrial activities have severely disrupted this centuries-old interaction of ecological communities and their environment. It suffices to state that efforts to achieve sustainable outcomes that fit people and nature have been a central challenge facing humanity. This challenge has been partly attributed to the increasing human population and the degree of globalization of consumption and production activities.

In the context of this paper, however, industrial activities such as petroleum exploitation in the coastal and marine areas of the Niger Delta in Nigeria have significant external effects on the coastal communities that have no direct benefit from the petroleum exploitation activities in the region. However, socio-ecological sustainability demands responsible production and consumption. Responsible production and consumption simply mean that humanity while meeting their needs must sustain the ecosystems and the benefits they provide for their survival. That is essential because the survival of humanity depends on the ecosystems –for they provide food, energy, and other human-made resources used every day. It is, therefore, important that we understand the link between ecological systems, society, and human survival.

Consequently, this paper adopts the library research technique to operationalize the theory of environmental externalities to assess the issues relating to socio-ecological sustainability and the survival of coastal communities in Nigeria.

2. Context and Setting

2.1 Theory of Environmental Externalities

Environmental externalities are costs and benefits derived from the production or consumption of a good or service. That means, they result from economic activity. The concept, which is also called external costs, external economies, or spill-over effects, was credited to the works of two famous English scholars of Economists - Henry Sidgwick (1838-1900) and Arthur C. Pigou (1877-1959) (Pigou, 2017, Sidgwick, 1901). Sandmo (2015, pp. 43-63), in the affirmative, states that the

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two scholars respectively, initiated, developed, and formalized the operation of the theory of environmental externalities. No doubt, the theory of environmental externalities stems from the field of Economics for scrutinizing the costs and benefits from the production or consumption of economic goods or services.

The theory basically underscores that human productive activities on the environment directly or indirectly generate costs and benefits (positive and negative externalities). In addition, it helps us to identify the nature of the productive activity and its costs or benefits (impacts) on the environment. Thirdly, the ultimate goal of the theory is to enable scholars to resolve environmental externalities arising from economic activities such as the operations of extractive and manufacturing industries.

In the context of this paper, environmental externalities are those activities which occur as a result of petroleum exploitation in the coastal and marine areas of the Niger Delta in Nigeria. It contends that the petroleum exploitation activities of the Multinational Oil Corporations (MNOCs) in the region, cause negative environmental externalities that are imposed on the coastal communities as unrelated third parties. In addition, the paper contends that the coastal communities which depend on fisheries as their primary source of livelihood suffer negative externalities without adequate compensation. In that vein, the paper submits that the coastal communities, instead of enjoying the benefits accruing from the petro-business owned and operated by the Federal Government of Nigeria (FGN) and the MNOCs in the region, continue to suffer and bear the negative environmental externalities (risks) as unrelated third parties in the country. In other words, the risks are internalized and imposed on the communities as unrelated third parties without adequate compensation.

2.1.2 Types of Environmental Externalities

Two main types of environmental externalities, namely; positive and negative environmental externalities can be identified (Van den Bergh, 2010, pp. 2047-2052). However, from an economist's point of view, positive externalities can be subdivided into positive production and positive consumption, while negative environmental externalities can be subdivided as well into negative production and negative consumption respectively. All four categories exist when the action of one person or an entity affects the well-being or survival of another. Their difference as implied by their names is that positive environmental externalities impose positive effects, while negative environmental externalities impose negative effects.

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The positive environmental externalities are benefits derived from economic activity that is enjoyed by all parties – investors, producers, and consumers alike. However, in a very strict terms, it is when the said benefits are mostly enjoyed by an unrelated third party or parties. A key feature of positive externalities is that the benefits or costs are generated as unintended outcomes in a given economic activity that must attract no compensation for, they do not directly affect the parties involved in the transaction. Another striking feature of positive environmental externalities (benefits) is that they can emanate either on the production side or on the consumption side (Varian, 2010). In addition, the unintended outcomes can manifest themselves in the form of changes in the physical or biological environment. Furthermore, positive externalities can arise when the actions of an individual or a group, confer others benefits or rewards. For example, a technological spill-over effect is a positive externality that occurs when a firm’s invention not only benefits the firm but also enters into the society’s pool of technical knowledge and benefits the society as a whole. In that wise, Nigeria has also enormously benefited from the technical knowledge of the MNOCs operating in the country.

However, in the context of this paper, the positive environmental externalities are those benefits expected from the petroleum industry owned and operated by FGN and the MNOCs in Nigeria. These externalities are expected to be mutually enjoyed by all the parties (FGN, MNOCs, and the coastal communities in the Niger Delta). It is imperative to state that this expectation on the part of the coastal communities regarding socio-ecological sustainability and survival is a mirage. For example, the approach of the Federal Government of Nigeria (FGN) to sustain the environment by internalizing pollution tax on the MNOCs, and the payments of ecological and 13% derivation funds to regional governments of the Niger Delta, among other palliatives have, have not resolved the petroleum orchestrated environmental externalities on the communities.

The negative environmental externalities on the other hand, are the spill-over effects of an economic activity imposed on an unrelated third party. As earlier posited, these also emanate from the petroleum exploitation activities in the coastal and marine areas of the Niger Delta in Nigeria that negatively impact the coastal communities as third parties. A critical feature of the negative environmental externalities is that they are imposed on the third parties (coastal communities) right from the production stage to the consumption stage of the good or service (in this case, petroleum exploitation) (Goodstein & Polasky, 2005: 32). The negative environmental externalities of

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petroleum exploitation are the outcomes which the MNOCs fail to consider as costs on the environment that harm both their business models and the coastal communities in Nigeria (Baumol & Oates, 1988, Meade, 1973, and Coase, 1960, pp. 1-40). This is not minding the fact that petroleum production involves the transformation of matter to energy (inputs into products as outputs) that generates wastes and causes pollution that degrades ecosystems (WWF International Report, 2015, pp. 1-68; Kadafa, 2012, pp. 38-51; Kadafa, 2012, pp. 19-28). Considering the value of ecosystems to human life, it is expected that the MNOCs' business models should have made adequate provisions to ameliorate the spill-over effects of pollution on the ecosystems' capacity to produce the goods and services that the coastal communities depend on for survival in Nigeria. It suffices to state that the current economic and business models of the MNOCs in Nigeria exclude the spill-over effects of pollution (oil spills and gas flaring) (Baumol & Oates, 1988; Meade, 1973; and Coase, 1960, pp. 1-40), and impose them on the coastal communities as third parties.

Another glaring fact about the negative environmental externalities is that the action by one party always affects the welfare of the other party (ies) adversely, and the loss in welfare is uncompensated. This happens in most cases due to a lack of liability to the third party(ies) who suffer the negative impacts (damages). This explains why pollution from the petroleum exploitation activities of the MNOCs that negatively impact the coastal communities in the Niger Delta is inadequately compensated even though there are enough legal regimes to that effect. In other words, the MNOCs and successive Nigerian governments are not liable for the plight of the communities as third parties in the petro-business. However, Pearce (2002), argues that pollution, as far as polluters force others to pay for something from which they get no benefit, is an injustice, having "caused damage to the third parties [without being] required to pay for that damage". Codato (2001) considers it as a "by-product of a product or consumption process that harms or otherwise, violates the property rights of others". Mitchell (2003, pp. 429-461) succinctly states that:

...it is a kind of theft, a theft of well-being, for the fact that whether it is committed reciprocally to each other, or not, does not stop it from being a theft; though situations of reciprocal externalization are somewhat distinct from those where the externalization runs one way.





However, the situations about reciprocal pollution relating to the issue of environmental protection strongly depend on the sociological concern of trust. Fairbrother (2016, pp. 359-382), and Irwin and Berigan (2013, pp. 424-449) respectively, argue that trust and public support for policies bothering on environmental protection must expect the guilty party to make “offsetting efforts” to protect the environment. Their expectation relies on the confidence that public authorities have the capacity to implement environmental protection policies as promised. They also believe in their requisite level of expertise and administrative capacity to avoid corruption, and willingly pay compensation for the wanton environmental damage experienced in the region. Thus, Malesios and Botetzagias (2009, pp. 511-530), and (Boyce (2017, pp. 1-15), opine that situations that call for the imposition of an externality by one party on others that are not reversed are based on power imbalance and inequality. This explains the situation in the Niger Delta: the all-powerful Federal Government of Nigeria (FGN) and the MNOCs continue to benefit, while the communities in the Niger Delta bear the costs. The FGN refuses to impose the costs on the MNOCs or sanction them for their negative actions on the environment, while the power to do so lies in it. In the years past and from all indications, the FGN seems not willing to do so because of its stake in the petro-business. Such ineptitude of the FGN is detrimental to the coastal communities as their means of survival are eroded continually.

Another significant challenge noticed is the way and manner in which the costs and benefits (i.e., the wealth) derived from the petroleum resources are distributed to society. With all intents and purposes, the concept of true federalism is totally neglected. The implication of this is that some people and parts of the country are benefiting at the expense of the region that suffers the negative environmental externalities. The benefitting parties internalize the negative externalities at the expense of the people and communities in the region as unrelated third parties. Odoemene (2011, pp. 123-135) and Edino et al. (2010, pp. 67-75), as well as Emoyan et al. (2008, pp. 29-37), highlighted some of the negative externalities orchestrated by MNOCs that are imposed on the coastal communities in the Niger Delta as loss of fishing grounds, forced migration, persistent health and shelter problems, social tension and other forms of deprivations. These negative externalities have severely impacted the socio-ecological quality of life of the people in the coastal communities of the Niger Delta in Nigeria.





2.2 Socio-ecological Sustainability

The concept of socio-ecological sustainability encompasses the environment (i.e., the physical and ecological components), social, economic, cultural, political, technological, and other spheres of human life (Petrosillo et al. 2013). The concept basically underscores the nexus between society and ecological systems, and the need to continue to safeguard, sustain, restore, or conserve that natural relationship. In addition, it means the integration of the various components of society and the natural ecological systems together in order to have a proper understanding of the challenges facing humanity as a result of the continuous alteration of the natural ecosystems by various human activities with the intention of resolving the challenges. This is crucial because socio-ecological systems (SEs), are truly interconnected, and are coevolving with the ecological components across spatial scales, especially in the aspect of the provision of essential goods and services to society, including food, fibre, energy, and drinking water, among others by the ecological components (Petrosillo et al. 2013).

The whole idea of socio-ecological sustainability centres on how to maintain, restore, or conserve the natural composition, structure, and processes of ecosystems (i.e., biodiversity of the various ecological communities) and their productive capacities. Maintenance of the natural productive capacity of the ecosystems (i.e., biodiversity and the natural resources - goods and services) they provide is crucial for preserving both the present and future generations of society. Going further, socio-ecological sustainability emphasizes that society should be able to preserve its economic and business abilities without jeopardizing its interconnected relationship with the ecosystems. Conversely, socio-ecological sustainability canvasses that human productive activities should not overwhelm the productive capacity of the ecosystems. That is to say, the naturalness of the ecosystems should not be altered arbitrarily by human productive activities. In other words, their natural capacity should be retained to continue to provide the natural goods and services that the coastal communities depend on for their survival (Chapin III, et al., 2000, Fischer-Kowalski & Haberl 2007). However, Berkes et al. (2003), Steffen et al. (2004), and Turner et al. (2007) , assert that people's dependence on the resources provided by ecosystems, and ecosystems' dynamics to varying degrees, are influenced by human activities.

No doubt, human activities such as petroleum exploitation, negatively affect the coastal and marine ecosystems in Nigeria. It alters the naturalness of the ecosystems and their productive capacities

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to supply the goods and services that the various ecological communities (including coastal human communities) depend on for survival.

In that vein, the coastal communities that depend on fisheries as their primary source of protein, or livelihood in Nigeria, like other coastal (fishing) communities in the world face enormous challenges for survival. Going by that, the paper, therefore, opines that the incessant petroleum exploitation activities in the coastal and marine areas of the Niger Delta, negatively affect the productive capacity of the ecosystems, thereby risking the survival of the coastal communities in Nigeria. In other words, the paper contends that petroleum exploitation activities negatively influence ecosystem dynamics to the extent that their productive capacities have been overwhelmed with no conservation measures, thereby putting the survival of the coastal communities in jeopardy in Nigeria.

However, it is important to state that there are national efforts in the form of legislation and petroleum taxes to reduce the effects of pollution in Nigeria. That notwithstanding, the FGN has not been able to hold the MNOCs accountable and achieve socio-ecological sustainability and survival of the coastal communities, especially the Niger Delta. In other words, the FGN could not query the MNOCs for flouting all national and international standards and best practices regarding the petroleum industry in Nigeria for sharing in the positive environmental externalities.

3. Conclusion

Through the theory of environmental externalities, the paper establishes that petroleum exploitation activities of MNOCs cause negative spill-over effects that undermine the capacity of the coastal and marine ecosystems of the Niger Delta in Nigeria. In the prism of the theory, the paper successfully argues that the negative spill-over effects are internalized by the benefiting parties (FGN and MNOCs), and are transferred as a burden to the coastal communities to bear as unrelated third parties. More than that, the application of the theory of environmental externalities also enables us to establish the connection between the negative spill-over effects of the petroleum industry and socio-ecological sustainability as it affects the survival of coastal communities in Nigeria. In addition, the paper has also been able to underscore the fact that the activities of MNOCs negatively impact the natural environment, and that in turn, has continued to risk the survival of coastal communities in the region. Going further, the paper establishes that pollution (oil spills and gas flaring) from the activities of the MNOCs are negative environmental

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externalities that cut across the region, and continually reduce the capacity of the coastal and marine ecosystems to absorb the wastes and/or pollutants as well as in providing the goods and services needed for survival by the coastal communities. In addition, the paper submits that the cost of such devastating consequences is not a major consideration for implementations by the FGN as contained in the national legislation or business models of the MNOCs. Furthermore, the paper affirms that it accounts for the low fines prescribed in the national legislation to remedy the negative environmental externalities caused by the activities of the MNOCs, and also, the FGN's inability to query them for flouting all national and international standards and best practices regarding the petroleum industry in Nigeria. Going further, the paper concludes that the external costs are internalized as petroleum tax and other instruments like ecological funds by the FGN to hold the MNOCs accountable, but the measures have not been able to reduce the effects of pollution in the region. The menace has continued and is unabated in the country. Therefore, the paper recommends that the FGN and the MNOCs as benefiting parties of the petroleum industry in the country should be more liable and adequately compensate the coastal communities for the spill-over effects of the petroleum industry in the region. In addition, vital ecological regions should be identified and mapped out as protected areas (PAs) to avoid overexploitation on one hand, and on the other hand, to conserve the natural ecosystem resources the coastal communities depend on for survival in Nigeria.

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Author's Profile

Fie David Dan-Woniowei has a Ph.D in Social Sciences with International Relations from the NW University, South Africa. He is a seasoned University Administrator (Deputy Registrar), NDU; Associate Member, NIPR; Member, ANUPA, NDU; Associate Fellow, ICAN, FGN. His teaching and research interests in the wider field of Political Science include political ecology, international political economy, politics of international law and institutions, conflict, peace and strategic studies among others.

