

# **THE POTENTIALS AND LIMITATIONS OF PAYMENTS FOR ENVIRONMENTAL SERVICES IN RURAL POVERTY REDUCTION OF OYO STATE FARM SETTLEMENTS, NIGERIA**

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## **Abstract**

*Payment for environmental/ ecosystem services (PES) is a market-based incentive for non-market goods. This is a compensatory mechanism for biodiversity conservation/ management of ecosystem. In the rural environment of Nigeria the inherent potentials of the Nigerian rural localities for ecosystem services is an impetus for poor to stand at advantage of being part of the PES program, since the poor mostly engaged in the cultivation of lands that are vulnerable to degradation. Unfortunately, the government farm settlement which is characterised by the above mentioned features is yet to witness the potential benefits of PES. It's on this note that this study attempt to unfold the potentials and limitations of PES in the farm settlement of Oyo state. Various scholarly articles, in the developing countries where PES had been implemented were reviewed. In spite of limitations of PES with regards to poverty reduction, empirical evidence shows that PES has poverty reduction potentials to lend the rural poor cum reduction of the environmental turpitude of the rural farmers. Hence, we suggested that if PES could be introduced to the rural farmers in the Oyo state farm settlement, it will enhance poverty reduction in a greater proportion.*

*Keywords: Market - based incentive; PES; biodiversity; ecosystem.*

## INTRODUCTION

Payment for Environmental Services(PES) is an approach to incentivized ecosystem services through direct or indirect payment to the environmental services provider for engaging in practices that produces external benefits to individual or society as a whole (Pagiola and Platis, 2007; Engel et al., 2008; Wunder, 2009). Explicitly Payment for Environmental services is an incentive-based mechanism for sustainable resource conservation and management (i.e. it can be used for preservation, restoration, and conservation of natural resources) as well for poverty alleviation.

This payment (which is an additional source of income to the participated household) serves as an encouragement for the environmental services providers for conservation of the ecosystem. Though contractual agreements are reached between the environmental service providers and service buyers, the critical element in PES is that both sellers and buyers of environmental services must feel confidence. Often than none, the rural landowners are the environmental service providers in most of the developing countries, of which greater percentage of them engaged in farming activities as a means of livelihood. Public sectors could act as the environmental service buyer; examples are the South Africa water program, Regional Integrated Silvopastoral Ecosystem Management Project, in Costa Rica, Nicaragua and Colombia which spanned for 5 years were funded by public sectors. Other environmental service buyers include private sectors such as Non-Governmental Organisations, and Ecosystem certified products consumers.

Several evidences are bound that the rural poor can participate and benefit in the PES program. Landell and Poras (2002); Hope et al. (2005); Scherr et al. (2007b); Peskett et al. (2008), Pagiola, et al. (2008) and Milder et al.'s (2010) studies indicated that it was not only the well-off that could benefit from PES, but the poor also do. The unanimous facts from these studies showed that, substantial numbers of the rural poor that participated in PES gained additional income aside from the farm income. Therefore, it could be inferred from the previous studies, that PES could be a pro- poor mechanism, in poverty reduction. According to Milder et al., 2010, additional income earned by these poor households prompts evolution of more profitable and robust land- use pattern, cause a better land tenure system and even consolidating social capital and help local institutions to be more vibrant. The study on

The Regional Integrated Silvopastoral Ecosystem Management Project, in Colombia, Nicaragua, and Costa Rica by Rios and Pagiola doubtfully confirmed that the poor have the desirable potentials to participate and gain from PES. However the extent of benefits that PES could offer the poor, in the Oyo state farm settlements, will largely depend on the overall objective, and design of PES.

## TYPES OF PAYMENT FOR ENVIRONMENTAL SERVICES

In the classification of environmental services types, four main categories are recognised according to the types of services rendered.

- i. Provisioning services
- ii. Regulating services
- iii. Cultural services
- iv. Supporting services

i. Provisioning service of ecosystem includes those environmental goods that can be obtained from forest, ocean and agricultural land- examples are fuel, fresh water, food and fibre. Fuel includes- wood, dung and other biological materials that could serves as source of energy. Generic resources- such as gene and generic information, used for animal and plant breeding as well as biotechnology are derived from ecosystem. Biochemical, natural medicines and pharmaceutical, food additives, biocides, are all from ecosystem, ornamental resources such as animals and plants products, such as skins, flowers are also from the ecosystem. Freshwater includes- fresh water that was obtained from ecosystem. Food includes- food products derived from animals, plants and microbes. Fibre includes- silk, cotton, jute, hemp and wood.

ii. Regulating services of ecosystem are the benefits from regulating ecosystem processes this includes- air, climate, flood, diseases and water management. Air quality could be greatly affected by the types of chemicals that ecosystem contributes to and extract from the atmosphere. Ecosystem also do influence climate by the amount of change in land cover, as any change in land cover will affect temperature as well as precipitation. Globally, amount of greenhouse gases that ecosystem sequesterate or emit have a great deal of influence on the climatic conditions. Natural hazards such as flood, hurricane and strong winds could be checkmated by the coastal ecosystem such as mangroves and coral reefs. Water regulation and waste treatment is not left out in the list of benefits ecosystem can provide, Ecosystem can filter out as well decompose organic wastes introduced into the inland, marine and coastal ecosystem. It's able also to assimilate and detoxify compounds through soil and soil processes. Disease could be regulated by ecosystem by altering disease vectors such as mosquitoes and human pathogens whenever there is any change in ecosystem.

iii. Cultural services of ecosystem include cultural diversity- because of diversity in ecosystem causes diversity in culture. Spiritual and religion values- many people attached spiritual and religious importance to ecosystem or its components. Both formal and informal education

derives benefits from the components and processes of ecosystem services. Ecosystem also provides aesthetic values- various ecosystems have elements of an aesthetic or beauty e.g. selection of housing location

iv. Supportive services of ecosystem are those necessary services for the production of all other ecosystem services e.g. soil formation, photosynthesis, nutrient and water cycling.

Fortunately enough, the rural ecosystem of Oyo state farm settlement could adequately provide these services if the rural poor could be integrated into PES scheme as it was during the implementation of Green Revolution program.

### **IMPORTANCE OF PAYMENT FOR ENVIRONMENTAL SERVICES IN NIGERIAN RURAL FARM SETTLEMENT**

The need for the Nigerian rural settings to embrace PES cannot be overemphasised as most of the rural poor in Nigeria largely depend on agriculture as the sole livelihood. Up till date Nigerian agriculture primarily employ the use of crude tools and implements such as cutlass and hoe, as food production remain the business of rural farmers largely. Expectedly, return on labour does not justify amount of the efforts invested on the farm. Hence the standard of living in the Nigerian rural settings has nothing to emulate. That being said; PES could be the bail-out mechanism for the Nigerian rural poor vis-a- vis Oyo state farm settlement rural people, participation in the PES program will at least earn them additional income source and thereby raise their living standard. Many studies such as (Wunder et al., 2008; Pagiola et al., 2005) supported this school of taught. Aside the income from PES, it can also encourage expansion in their production frontier by cultivating more acreage of land as to generate more output that can be transformed into more revenue.

One of the daunting issues in most of the developing world (Nigeria inclusive), is that most of the aquatic and terrestrial ecosystems have already suffered degradation (The Millennium Ecosystem Assessment, 2005). This is most peculiar to agrarian economies like the case of Nigeria rural areas, where agriculture is the mainstay of livelihood. Given this presentation, conservation and sustainable management of the Nigerian rural world is supposed to be given a prompt attention. From the study of Zbinden et al. (2005) in Costa Rica PSA program, it could be inferred that PES played a major role in conservation and management of environmental resources; hence PES can still be helpful for the same task in the conservation of the farm settlement already degraded land in Nigeria.

Evidences abound that rural poverty has reached an endemic level in Nigeria (Abiola and Olaopa, 2008), whereby more than 80% of the poor are residing in the rural environment.

Though PES was not primarily design for poverty reduction, but empirical studies have showed that, it could be a “salvaging” instrument for poverty reduction, especially when it is so designed (Suyanto et al., 2007). It is, therefore, no gainsaying if Nigerian agricultural policy makers can employ PES to reduce her poverty rate.

South Africa water program, give an insight into how PES could be instrumental to reduction of unemployment (which is an extension of poverty), this program was designed as to cater for the unemployed youth in South Africa. The result indicates that PES was able to reduce poverty to bearable level. Consequently, Nigeria rural environmental could also borrow some leaves from the South Africa example as to tame her own unemployment rate.

## **THE POTENTIALS OF PAYMENT FOR ENVIRONMENTAL SERVICES IN NIGERIAN RURAL FARM SETTLEMENT**

In discussing the would be benefits of PES if implemented among rural Nigerian farm households, here the benefits is classified in two major terms substantially- i.e. short and long run terms.

### **Short-term potential benefits**

- **Increased cash income**

Evidently, research reports on the poor people participation in PES in Costa Rica, Colombia, Nicaragua, China and some other Latin American states, showed that the cash benefits received by the participants are significant at the household income level (Uchida et al., 2007; Molnar et al. 2007; Wunder, 2008). This cash benefits will in turn increase the household consumption and investments level. Also, better access to education and health care as well as enhancement of enterprise productivity can be achieved (UNEP, 2008)

- **Provision of social capital**

PES, when designed as a pro-poor incentive mechanism can be a link between the participants and external world business activities. This is achieved through PES- related economic transactions and interaction with PES-relevant agents (UNEP, 2008). With this expanded experience, useful information and more opportunities are bound to be achieved by the poor when participated in PES program.

- **Access to training and Technical assistance**

Hitherto, most of the rural farmers have no or little access to innovations and new technology, but with PES more of the rural dwellers were able to gain insight into better knowledge of

conservation/management of environmental resources. Intuitively it will have a positive environmental behaviour attitude of the poor, as well enhancing their productivity.

### **Long run potential benefits**

#### **•Improvement in natural asset**

PES could be instrumental to increase in the value of forest due to better management and emerging of new market opportunities. Also study conducted by Landell-Mill and Poras (2002), observed that PES could be helpful in increasing the land value, especially when the land tenure system is being regulated. Miranda et al. 2003 argued that PES when implement improved soil fertility, biodiversity conservation, improved water, and air qualities, and reduction in the forest fire is greatly enhanced.

#### **• Improvement in physical assets**

PES has potential of creating physical assets in the form of infrastructure development e.g. transport, market, market infrastructure, research and health facilities (Miranda et al., 2003).

## **THE LIMITATIONS OF PAYMENT FOR ENVIRONMENTAL SERVICES IN THE NIGERIAN RURAL FARM SETTLEMENT**

Having mentioned the potential benefits of PES above, the following are the limitations of PES:

### **Participation eligibility**

Participation eligibility is one of the daunting task that could hinder poor from participation in PES program, for instance, some PES program required that the potential participants should be located in the priority conservation area on the basis of biodiversity reason (Milder et al., 2010). Conversely, there is possibility of absent of high-poverty rate in a particular location that is endowed with ecosystem service. Hence must re-think on the eligibility of poor to participate in PES, about to locality.

### **High-transaction cost**

As noted by Pagiola et al. (2005), high-transaction cost associated with small landholders, will be a major drawback to the participation in the PES schemes. Thus, if the transaction cost is as low as possible, it will provide a good leeway for the poor to be opportune to participate in PES program. A possible way of circumvent this problem is by adopting collective contracting, this will enable the transaction costs to be spread over a large group of people rather than individual.

## **PES conditions and options**

When onerous conditions are presented, especially those that may increase transition costs unduly may be a threat to participation of poor people in the PES scheme as noted by Pagiola et al. (2005). Thus, PES conditions and options should be given in such a way that it will be poor – friendly in nature.

## **NECESSARY FACTORS FOR PES TO BENEFIT THE POOR**

### **Establishment of environmental management structure**

It has been identified that, Environmental regulation is a factor, that aid demand of environmental services by the private buyers. With the existence of Environmental regulatory body, in most of the Latin American countries, Australia evidence has showed that the poor were able to benefit from Payment for Environmental services. Unfortunately, in most of the developing countries ecosystem conservation regulatory structure are weak if at all in existence. Nevertheless, establishment of a vibrant Environmental regulatory framework in the developing countries may provide a viable opportunity for the poor to participate and benefit from Payment for Environmental Services.

### **Ecoagricultural program in the Public sector agricultural policies**

According to Milder et al. (2010), many developed and the middle- income countries, are replacing their agricultural policies with Eco agriculture payment. Thus, a huge amount could be invested in PES related program in agricultural sector, hence the poor in the developing environment which normally earn their livelihood through agriculture, could bountifully benefit from PES. Also development banks, such as Nigerian Agricultural Rural Development Bank (NARDB) and the grass root banks, such as the micro finance banks, could be saddled with responsibility of providing funds for Agri-Environmental services. Concerned NGOS could also consider Eco agriculture option as a promising program that will boost the economy of rural poor. However, the magnitude of the benefit of the poor in the Agri-Environmental program is largely depending on the attributes of such program.

### **Institutional arrangement**

Because of the complex nature of PES, there is a need for the establishment of local institutions that will be responsible for addressing issues concerning PES, in the rural areas. In the Costa Rican PES program, institutional arrangements greatly enhance the poor to participate and to benefit from the agroforestry program. Swallow et al.( 2005), submitted that delivering, of ecosystem services, may require collective management approaches in the biodiversity



conservation, watershed protection and landscaping. Also importance of local institutions cannot be overemphasized in enabling rural poor to adequately compete with the larger ecosystem providers, through collective actions. Its, suffice to say that, the Government could expand scope of the existing poverty alleviation program, as to take care of the necessary structures for PES programs.

### **Information availability on PES**

Information on research findings on PES and livelihood could prompt environmental services buyers, to have interest in investing in the PES programs. This will increase the available markets for ecosystem services, for the poor to sell environmental services. With the trained extension agents, rural dwellers could be informed of conservation or management practices relevant to ecosystem services. Monitoring, quantification of ecosystem services and its verification is also enhanced by adequate research findings (Scherr et al. 2007b). Relevant research institutes, could be given the mandate of researching and publishing of findings related to biodiversity conservation/management and human livelihood, to strengthening the viability of PES, in the developing countries.

### **Enabling Environment for corporate and individual participation**

Many corporate entities and individual consumers are involved in purchasing ecosystem services, as to fulfil their corporate social responsibility or for individual ethics reasons (Scherr et al. 2007b). Australia, United States and Europe are at the forefront in the ecosystem services markets. Environmental services provision, have gone globally in some few past decades, with the poor benefitting substantially in it.

Developing world could also join in this direction, by allowing an enabling environment for both the corporate bodies and individual ecosystem services consumers, to participate.

### **Secured ownership rights**

In Africa, access to land is often (dejure or defacto) governed by traditional common property system. Since land rights are major determinant of investment, it's essential that land security is given an utmost priority in PES program. Without it, investment on the land by the poor may be a mirage. Intuitively, a need for a well-define property rights could not be wished away (Cobera and Brown, 2008). Many PES programs have recognized the importance of property rights and therefore called for formalization of ownership rights of land to be adequately addressed.

Having, explained the potential benefits and limitations of PES, in the rural farm settlement.



The possibility, of PES to induce rural poor to participate in the environmental resources conservation, needed to be considered. In doing this, there are salient questions that needed to be answered- What would be the farmers" willingness to Accept (WTA) to participate in conservation of environmental resources?

Here the readiness of the rural poor to participate, in environmental resources conservation needed to be determined. Since, the PES, in this context is a hypothetical case, a stated preference method such as choice experiment method could be used to ascertain respondents WTA. Respondents will be requested to choose their preferred options from mutually exclusive hypothetical alternatives (Barr and Mourato, 2012). This could be done through a well-structured questionnaire and interview schedule.

The payment vehicle for the PES program is also necessary to be established, because the type and amount of payment each participant expects could go a long way to determine their participation (Wunder, 2008).

Finally, the question of who will be responsible for the payment of environmental services could be addressed in the case of Nigeria, since the market for environmental goods is grossly not in existence in Nigeria. Thus the onus is on the public sector buyers, such as government as in the Costa Rican case. Private sector under regulatory obligation and private sector that are voluntarily interested in conserving environmental resources could also serve as buyers respectively.

## **CONCLUSION**

Payment for Environmental Services has been adjudged in many environmental resources studies as a "tool" for natural resources management, as well as poverty reduction. Hitherto, Nigerian rural poor are yet to witness the potential benefits of PES till date, which could be due to many reasons- such as lack of awareness/ lack of political will by the policy makers. Therefore, this paper attempts to unfold the potential benefits the would –be PES participants (especially the rural poor) stand to gain, and also to unveil those factors that serve as constraints to PES scheme in the rural environments of Nigeria. This piece could be helpful, more importantly as the government of the day is committed to transformation agenda of the rural settlements.

Poverty has reached endemic status in the rural areas of Nigeria, despite many poverty programs that were put in place to tackle it. With the introduction of PES, as it was witnessed in other developing economies, the scourge of poverty of the rural poor in Nigeria could be reduced drastically.

Despite the limitations of PES, it is still evidently seen that PES has good “ingredients” of tackling rural poverty especially when it is designed for such purposes. It is the candid opinion of this paper that if both public and private entities could be involved as the Environmental services buyers while the rural poor play the role of Environmental service sellers, poverty will not have a place in the lexicon of Nigerian rural citizens.

## IMPLICATIONS FOR FUTURE RESEARCH

Having highlighted potentials and limitations of Payments for Environmental Services (PES) above, the need for a well-designed PES program is highly inevitable. Such design should be cognizance of poverty and environmental resources conservation, hence the attributes of such PES program should be tailored towards rural poverty reduction and environmental resource conservation in respect to agricultural land conservation. However for the successful implementation of PES, the need for the right target group to be identified is imperative, as evidence from the previous PES programs, indicated that non-poor derived more benefits than the poor. Also eligibility for the participation of the poor should be thoroughly addressed with regards to locality of the participants, hence; the inherent environmental challenges of a particular location could be the benchmark for the participation of the poor within such locality. Finally, a well-structured institutional arrangement that will address issues related to land tenure system, transaction costs and other related matters is necessary in the formulation of a formidable PES program. From the foregone discussions it's very important that the future research should endeavour to take care of the above mentioned issues as to enhance PES efficiency in solving rural poverty and environmental resource conservation.

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