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LESS FAVORED AREAS UNDER PRESSURE: CONDITIONAL INCENTIVE BASED APPROACH TO DEAL WITH EXTERNALITIES

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ABSTRACT

Less favoured areas are characterized by having relatively high population densities compared to the carrying capacity of the natural resources, in combination with poor market access and adverse agro-climatic conditions. Very often less favoured areas face external pressures due to high population growth, climatic change and globalisation with unequal benefits. The result is that more often than not, less favoured areas move into development pathways consisting of a vicious circle of environmental degradation and poverty.

In this paper we argue that conditional incentive based rural development where positive incentives are used as income support to targeted populations in less favoured areas offers scope to break the vicious circle if and only if it is accompanied by conditions on the support to ensure that activities and investments support public social and environmental goals related to breaking the negative poverty – environment nexus.

Keywords: policy assessment, resource management
JEL classification: Q24; Q28

Introduction

The Green Revolution managed to pull large segments of the rural poor out of dire poverty in the better-endowed areas during the 1960s and 1970s. Rapid industrialization in areas with good market access especially in Asia and parts of South America also helped to alleviate poverty. Efforts at poverty alleviation in the less-favored areas, especially in Africa, have failed to bring progress and development despite decades of development assistance. Growing

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population in combination with poor initial resource endowments, military and political conflicts, and macro-economic policies biased against agriculture have not only failed to alleviate poverty but have also led to a deterioration of the natural resource base on which the livelihoods of the rural population depends critically.

The linkages between poverty and the environment are the subject of both academic and policy attention. As early as 1972 at the Stockholm Conference on environment, poverty was earmarked a “great pollutant”. The poverty-environment “nexus” also figured prominently in the analysis and recommendations of the World Commission on Environment and Development – the Brundtland Commission in 1987. The World Bank argued that “poor are the agents and victims of environmental degradation”. Despite this widespread recognition of potential linkages between poverty and the environment, there remains a great deal of uncertainty and debate on the nature and direction of these interactions, both conceptually and empirically.

It is generally accepted that sustainable development hinges on the dimensions of ecological sustainability, economic feasibility and social acceptance. Trade-offs occur between the possibilities to attain acceptable levels of these dimensions and win-win-win situations are more the exception than the rule. This is especially the case in what is commonly termed less-favored areas. These are rural areas where a number of critical development domain dimensions are unfavorable. These development domain dimensions constitute the first main issue related to sustainable development. The development domain dimensions include agricultural potential, population density, market access and institutional setting. Less-favored areas are typically characterized by a combination of low agricultural potential and/or poor market access, and often exist in an institutional setting that is not conducive to alternative viable development pathways (Pender et al, 1999).

Agricultural potential is low due to agro-climatic conditions, the quantity and quality of the natural resource base or both (limited and/or unreliable rainfall, poor soils, steep slopes, short growing seasons, etc.). Poor market access is related to the relative isolation of an area and is often linked to poor physical infrastructure. This also results in poor service support (health and education facilities, research and extension). High population density depends critically on the carrying capacity of the land since in many parts of Africa this is reached at low levels of population in absolute terms. The institutional setting refers to the set of rules governing natural resources and their use.
There is a growing consensus in the research community that the complex situation of less-favored areas does not have an easy solution. In order to improve the lot of these poorest people of the world a combination is needed of appropriate technology, an institutional setup that helps households to cope with presently existing market and government failures, and a set of policy measures that induce behavior that leads to both increased household welfare and improved management of the natural resource base (Deininger, 2003).

Duraiappah (1998) developed a simple conceptual model of the poverty-environment nexus. In this conceptual model, he distinguished between endogenous and exogenous causes of poverty. Endogenous poverty is defined as poverty caused by environmental degradation, while exogenous poverty is caused by other factors. It is often claimed that (exogenous) poverty is a major determinant or even the root cause of environmental degradation. However, Duraiappah argues that if the poor degrade the environment, it is predominantly due to the presence of market and institutional failures. Market failures exist if market prices do not properly reflect economic resource scarcities, e.g., in the presence of (uncompensated) external effects. Institutional failures include the absence or lack of enforcement of property rights. For example, it is sometimes argues that the poor degrade the environment to a larger extent due to shorter real time preference. Many deforestation studies showed that time preference is determined to a large extent by land tenure systems. Insecure land tenure systems (an institutional failure) would hence cause short time preferences and thus unsustainable behaviour (of both the poor and the rich). Other market and institutional failures highlighted include subsidies that provide a disincentive to ‘internalise’ external costs.

Environmental degradation, in its turn, may increase or perpetuate poverty – and this cause of poverty is labelled endogenous in the conceptual model proposed by Duraiappah. Even within this simple model, the poverty-environment interactions can take many forms, and it has been demonstrated that the appropriate policy intervention is highly dependent upon the form of the interaction, which may show a considerable amount of variation over time and space and is therefore likely to be (very) case specific.

Another important issue that plays an important role in sustainable development is the time frame. Processes that affect ecological sustainability tend to have long-term dimensions and implications, while economic feasibility and social acceptance have a much shorter time horizon. This is especially true in poverty-stricken areas where the rate of real time preference (subjective discount rate) is (extremely) high (Pender and Walker, 1990; Pender, 1996).
To achieve sustainable development, rural communities and the households of which they are comprised require a policy environment conducive to change, although it is not always clear at the outset what these policies should entail. One reason for this is the existence of trade-offs between different societal goals such as welfare growth on one hand and agro-ecological sustainability in the other hand. A second reason why it is not clear what policies should be pursued is that land use is decided by households within communities and not by policy makers directly. Household decision making with respect to land use is guided by household goals and aspirations within a biophysical and socio-economic context that, in the case of less-favored areas, severely limits households’ opportunities to improve their welfare. Policies directed at poor households in the less-favored areas to simultaneously improve household welfare and agro-ecological sustainability require a thorough understanding of household decision making within the complex setting in which households operate.

To disentangle this complexity of less favoured areas and get a handle on both the root causes and triggers on the poverty – environment nexus we propose to make a separation between macro-level drivers, micro-level actions and their interactions. This allows us to present a model for developing a sustainable development oriented policy strategy.

This approach conditional incentive based rural development is conceptually based on approaches adopted in the EU to address Europe’s less favoured areas and is consistent with modern approaches related to payment for environmental and social services that have become increasingly popular as rural support measure in line with WTO regulations.

The analysis and proposed approach combines insights from more traditional neo-classical development economics, new institutional economics and environmental economics.

The structure of this paper is as follows. In the next section we will briefly discuss some of the major external and (relatively) autonomous drivers behind the problematic poverty - environment nexus. We continue by discussing the local linkages between households, communities and the environment. This is the key to understanding the discrepancy between actual current behaviour of economic actors and the desired activities and investments that would allow these less favoured areas to enter a pathway of sustainable development. To do so we present a conceptual model for analysing investment from the household perspective. We then go on to present a promising approach for rural development that is very well suited to address the pressing issues facing the less-favoured areas: conditional incentive based rural development approaches. We present two examples related to this approach, namely the
European Unions approach to less favoured areas and the concept of payment for environmental services. Throughout this paper we combine elements from development economics with a neo-classical foundation with insights from both environmental economics and new institutional economics. We wrap up this paper with a brief discussion of the main arguments.

External drivers and poverty environment nexus

The external and autonomous drivers related to the poverty environment nexus are population growth, climatic change and globalisation without a level playing field.

Population growth and stagnating yields are causing serious resource degradation in many less favored areas especially rainfed lands. Until a few decades ago, natural resources were usually quite abundant in these less favored areas, and, could be regenerated by farmers through the use of fallow and shifting cultivation. Moreover, many of the more fragile lands were not farmed at all. Currently less favored areas frequently support fairly high population densities, needing to provide increasing amounts of food, fuelwood, water, and housing. In the absence of adequate increases in agricultural productivity to secure their livelihoods, farmers reduce needed fallow periods, increase intensity of resource use beyond carrying capacity and expand into new areas, many of which are environmentally fragile and easily degraded. Environmental problems associated with rainfed farming include (Scherr and Hazell, 1994):

- Conversion of primary forest to agriculture, with loss of biodiversity, climate change, and exposure of fragile soils.
- Expansion into steep hillsides causing soil erosion and lowland flooding.
- Degradation of watershed protection areas, with downstream siltation of dams and irrigation systems and increased flooding.
- Shortened fallows with loss of soil nutrients and organic matter, resulting in declining yields.
- Increased pressure on common property resources (woodlands and grazing areas), with breakdown of indigenous institutions that regulate and manage these resources, leading to open-access regimes and resource degradation.
Declining resilience in ecosystems, with reduced ability to rebound from stresses such as droughts.

Climatic change has evolved from a basically environmental issue to a complex development issue, especially in the less favoured areas. Increased agro-climatic risks due to more severe weather, temperature rise leading to desertification and the occurrence of both floods and droughts often has more severe repercussions in less-favoured areas due to the lower resilience to shocks and the vulnerability to risk and uncertainty.

Ongoing globalization and economic liberalisation partly as a condition from the international community for development aid to countries with less favoured areas, have not brought the all the promised benefits. An important reason is that lack of market power creates an uneven playing field from which the less favoured areas suffer most.

The key lesson that needs to be drawn from this brief analysis is that there are major drivers affecting less favoured areas over which policy makers and development agencies that have a direct responsibility for those areas have little or no influence. The can be considered the dynamic external constraints on the system. However we do not want to dwell too long on these issues but rather move on to an area where policy makers and development agencies do have some leverage and can make a difference.

**Micro-level poverty environment nexus**

This linkage between resource degradation and poverty which we labelled the poverty environment nexus not only plays a role at the macro-level but has very specific ramifications at the micro-level. In this nexus, the choices of both individual resource users (farm households), as well as those made by communities as a whole in which they operate, provide the key to understanding the issue and hence in finding solutions. Farm households use their resources including soil and water to engage in activities that help them to attain their goals and aspirations. Households, as mentioned earlier, do not operate in isolation. They are constrained by the agro-ecological circumstances they face, the existence and state of social and physical infrastructure, existence and performance of markets, services and the particular institutional arrangements they face.
The challenge to the scientific community is to provide an adequate analysis of the micro-level poverty environment nexus. These interactions can be schematized as is done in Figure 1. The key to decisions related to resource use in less favoured areas is the agricultural household (1) and the decisions made there. These households depend on a dynamic stock of natural resources (2). The linkages between the natural resource base and the agricultural households (4) are the essential contribution of bio-economic modelling and analysis.

![Figure 1: Linkages between households environment and the natural resource base](image)

The last realm is the community (3). The relationship between the community and the households (5) is captured in local markets, institutions and interactions between households. These arrangements are incorporated into the integrated model framework. The last set of interactions relates to the linkages between community level activities and the natural resource base (6).

The complex situation of less-favoured areas does not have an easy solution. In order to improve the lot of these poorest people of the world a combination is needed of appropriate technology, an institutional setup that helps households to cope with presently existing market and government failures, and a set of policy measures that induce behaviour that leads to both increased household welfare and improved management of the natural resource base (Deininger, 2003).

Behavior of economic agents including the small holder rural depends critically on resources the agents are endowed with including their knowledge base, skills and competences. They use their resources to pursue their goals and aspirations using the institutional arrangements...
and organizational forms available to them and constrained by the natural environment. Their choices are guided by felt incentives arising from the institutional arrangements including market prices, norms and values and implemented public policies.

In Figure 2 this situation is highlighted. Development indicators are can be tagged onto different components in this figure as measures of success of society with respect to economic performance and human development. Problems facing society can be attributed to circumstances that do not prevent externalities and do not lead to desired endogenous sustained livelihoods of individual economic agents.

**Conditional Incentive Based Rural Development**

Policy interventions in general and rural development policy intervention more specifically are needed when the forces in society, including market forces, are unable to attain sustainable progress without outside interference. This situation is characterized by the existence of important externalities related to current investment patterns, activities and behavior of stakeholders in the rural areas that inhibit the attainment of desired solutions either now or in the future. This inability to deal with externalities arises when the best individual choices do not coincide with the best choices for society as a whole. Externalities are defined as positive or negative impacts on any party not involved in a given economic
transaction. An externality occurs when a decision causes costs or benefits to third party stakeholders, often, although not necessarily, from the use of a public good. In other words, the participants in an economic transaction do not necessarily bear all of the costs or reap all of the benefits of the transaction. The general problem statement pertaining to many less favoured areas is to a large extent a list of externalities from the autonomous processes in society that need to be addressed. The first major source of externalities is the inability to let social costs be part of the overall costs of private transactions. To address this issue measures have to be taken so that social costs are somehow internalized in the processes. This is the cost aspect of externalities.

The second major source of externalities is the fact that the rules governing the everyday interaction between and amongst economic actors and groups of economic actors are such that they are not conducive to sustainable development. These rules are referred to as institutions and are defined as the formal rules and informal constraints that guide the interactions amongst and between individuals and groups within a society and the means to enforce those rules and constraints. The major economic institutions related to rural development are: property rights, exchange systems, division of labor and safety nets. Institutions reduce uncertainty and risk from the interaction between and amongst economic actors and groups of economic actors. Linked to institutions are organizational forms that help ensure the rules of the game work properly. These organizational forms include public agencies, NGOs, private sector firms and farm households. Institutions and organizations are closely linked and provide the structure of development pathways. Institutions and organizations evolve over time to adjust to changes that occur due to changes in the natural environment and the socio-economic circumstances. Changes occur when there are incentives to do so. Individuals and groups are constantly faced with scarcity of resources and will adapt the rules of the game if the incentives to do so outweigh the costs of changing the institutions.

When there are negative externalities, this implies that the existing institutions (in terms of rules of the game) are not able to adequately (efficiently and effectively) prevent the occurrence of these externalities. When this is deemed a problem there is a need to change the rules of the game in such a way that the negative externalities are no longer generated.

If economic performance and human development indicators are not up to the desired standards, this too is a sign that institutions are not working properly. Rural development policy can be construed as an attempt to provide sufficient incentives to change institutions and organizations is a desired direction.
In summary behaviour of economic, social and political actors is constrained by the existing institutional arrangements and organizational forms.

The problems confronting the less favored areas can be considered a large collection of private behaviors, activities and investments that have externalities and hence lead to high costs to society. We can therefore say that the objectives of sustainable rural development are aimed obtaining desired solutions that entail a different set of behaviors, activities and investments by the stakeholders involved. To do so rural development policies must be aimed at providing a conducive environment that helps to induce relevant changes in institutional arrangements, organizational structures, and behavior of individuals and groups.

Figure 3  traditional rural development strategies
Traditionally rural development is strongly focused on three areas: public investment in physical and social infrastructure including service provision, secondly, provision of knowledge through awareness programs, extension, education and training, and thirdly through financial mediation to help private investment.

In addition there have been price intervention policies that aim at protecting either consumers or producers and have a profound effect on choices made by economic agents.

Figure 4  The role of subsidies and price policy

The effects of these measures have been mixed because there is a relation between these measures and income generation, but not with externalities.

The behaviors, activities and investments required to obtain desired solutions can be attributed different sets of stakeholders. We distinguish between the public sector, non-
governmental organizations, the private sector and farm households. Distinguishing between these actors and their roles is an important step in defining what interventions are needed to obtain desired results. For the public sector it is public investment and service provision by civil servants. For NGOs it is also service provision and investment. For the private sector it is private investment and the deployment of desired activities, while for farm households it relates to household and farm behavior and investment.

In general public and NGO investment and service provision can be aligned directly with rural development goals, whereas for the rural households and the private sector extra effort is needed to align the rural development objectives with the private goals and aspirations. It is precisely because there is a misalignment between private and societal goals that externalities occur. Incentives and disincentives are therefore needed to induce rural household and the private sector to change their activities, investment patterns and behavior.

Figure 5  Conditional incentives at the basis of rural development

- Traditional instruments used in rural development can be summarized as:
• Public investment to take away barriers and to lower private costs.

• Awareness and communications to disseminate knowledge amongst stakeholders concerning the externalities, and disseminate knowledge about alternative activities and behaviour that have a potential positive impact on both private and societal goals.

• Command and control mechanisms aimed at prohibiting undesired activities, behavior and investment. These command and control mechanisms are embedded in the institutional arrangements.

The innovative instruments that are part and parcel of in conditional incentive-based rural development strategy aim at directly inducing change in the behavior, activities and investment patterns of private sector parties and rural households by making it worth their while to make those very changes. This is done through:

_Economic instruments._

All the economic instruments listed below have been employed in the past with mixed results. What the CIBRD approach entails is a systematic application of positive incentives to induce desired behavior.

• Fiscal policy (tax rebates)

• Price policy (subsidies)

• Financial (soft loans)

• Resource (tradable rights)

• Social (direct payments)

• Payment for Environmental or Ecological Services

Positive incentives are, in our vision, the best method of influencing behavior, activity choice and investment strategies. However, this may in some cases not be enough to ensure adequate participation. There is also a set of punitive instruments that can be used as instrument of last resort:

• Fiscal policy (taxes)
- Price policy (levies)
- Enforcement (fines)

The success of the application of these positive incentives and punitive instruments hinges on the fact that they are made conditional on the behaviour that is being influenced.

In summary we can say that in order for policy instruments or combinations of instruments to be effective in the sense that they lead to the desired solutions to the problems in the less favored areas, the benefits of the incentives and the expected private pay-off to the changing behavior must outweigh the costs related to that change.

For society as a whole the benefits of the attained objectives results must outweigh the costs of implementing these policies. This means that the efficiency and effectiveness of policy instruments in relation to the desired results should always be taken into consideration.

The conditionality principle ensures that the benefits accruing to the participants are leading to the objectives of the policy interventions

- Access conditional on compliance with specified national policies related to sustainable management of less favored areas
- Access conditional on non-generation of specified negative externalities
- Access conditional on compliance with relevant rules, regulations and legislation
- Incentives defined within WTO regulations
- Incentives defined within the national budget

**The EU experience with less favoured area (LFA) payments**

The Common Agricultural Policy (CAP) of the EU was initially developed in the 1960s to ensure adequate food production by supporting farm households with production related subsidies. As agricultural productivity increased in the European Economic Community (EEC) the CAP lead to production levels above and beyond the levels required by the internal market of the member states (European Commission, 2004). At the same time differences in rates of development were becoming apparent in different parts of the community. In the mid 1970s the first initiative was developed to protect farmers in less favoured areas (LFA).
Initially the LFA measure, Council Directive 75/268/EEC on ‘mountain and hill farming in certain Less Favoured Areas’ had one main objective and two sub objectives: to 1) ‘ensure the continuation of farming’, thereby 2a) ‘maintaining a minimum population level’ or 2b) ‘conserving the countryside’. The objectives were designed to address a number of needs, specific to certain LFAs characterised by least favourable production conditions.

Since its introduction in 1975, the objectives of the LFA measure have evolved, reflecting a shifting constellation of social and environmental needs in less favoured areas, and a changing set of priorities. In general terms, the social need has lessened, and specifically, the measure is no longer seeking to address rural depopulation, although concern for the maintenance of a certain type of agricultural land use and environmental protection has increased. Furthermore, with successive amendments, Member States have been offered increased flexibility in the implementation of the measure. Member States are now responsible for fixing the levels of compensation, defining the types of production to be covered by the scheme, and modifying LFA boundaries. This has meant that in many countries an additional layer of national or regional objectives is pursued. A change and proliferation in the measure’s objectives, along with a concomitant shift in the logic of intervention, suggests that the way in which the measure is implemented in different Member States through the classification criteria, the farm level eligibility criteria, and the modulation and structuring of payments, should be subject to review. Over time considerable disparities between Member States in terms of the area classified, the level of payment per beneficiary, and the effects of the measure on farm incomes with implications for its effectiveness and efficiency have emerged.

The core objectives of the LFA measure are concerned with securing public objectives. Under the most recent Council Regulation the purpose of the measure is to contribute to ‘maintaining the countryside’, through the continued use of agricultural land, and also to ‘maintain and promote sustainable farming systems’. His is a clear case of objectives that have evolved over time. Throughout the history of the measure payments, they have been intended to provide an effective contribution to the additional costs of agricultural activities arising from specific handicaps in classified LFAs. Farmers were to be compensated not to bring their incomes up to a given level, such as those outside the LFA, but in order to secure the continuation of appropriate agricultural management.
Rural development policy in the EU has evolved differently than that in other northern countries. If we compare the EU to the US the following picture emerges. The European Union has taken much more conscious steps toward the development of a rural policy framework. European farmers and other rural interests have done a better job of winning the hearts and minds of the urban population. Perhaps it has to do with the fact that, unlike their American counterparts, most European farmers live in villages, not dispersed on the land. They might thus better understand that commodity price supports do not provide them or their neighbours with a potable water supply or off-farm employment opportunities (Lamie and Kovalyova, 2002).

Since the reform of the Common Agricultural Policy, Rural Development is playing an increasingly important role in helping rural areas to meet the economic, social and environmental challenges of the 21st century. Rural areas make up 90 percent of the territory of the enlarged EU and the new legal framework points more clearly to the direction of boosting growth and creating jobs in rural areas – in line with the Lisbon Strategy – and improving sustainability - in line with the Göteborg sustainability goals.

Current Rural Development policy (period 2007-2013) focuses on three areas in line with the three thematic axes laid down in the new rural development regulation: improving competitiveness for farming and forestry; environment and countryside; improving quality of life and diversification of the rural economy. A fourth axis called "Leader axis" based on experience with the Leader Community Initiatives introduces possibilities for locally based bottom-up approaches to rural development (Shuh et al, 2006).

In general targeted subsidies in the EU have moved from production orienented subsidies comparable to the input subsidies to the agricultural sector in Egypt today towards income support to bring targeted rural incomes up to a given level (European Commission, 2004).

In principle, the EU Regulation on LFAs provides a flexible framework for an efficient system of targeted compensatory payments. The present combination of classification criteria, eligibility rules and payment structures at Member State level, results in payments being geared towards specific needs. At present income support in the EU is strongly linked to the notion of cross-compliance.

Cross-compliance creates a link between the full payment of support, and compliance with certain rules relating to agricultural land and to agricultural production and activity in the areas of the environment, public, animal and plant health, animal welfare and good
agricultural and environmental condition. This link is expressed in concrete terms in the possibility, if the rules are not respected, of full or partial reductions of certain EU agricultural payments. The reductions shall be based on the severity, the extent, the permanence, the repetition and the intentionality of the non-compliance.

Cross-compliance has two objectives. The first is to contribute to the development of sustainable agriculture. This is achieved through the respect by the farmer of the rules relating to the relevant aspects of cross-compliance. The second objective is to make the Common Agricultural Policy of the EU (CAP) more compatible with the expectations of society at large. There is now a growing body of opinion that agricultural payments should no longer be granted to farmers who fail to comply with basic rules in certain important areas of public policy.

Relatively little farmland in the LFA has ceased to be managed by agriculture. Thus the principal goal of the measure has been reached in the EU-15. This contrasts with substantial areas of farmland abandonment in other industrialised countries, for example in parts of the United States.

The LFA measure is one of a number of policies that have contributed to this outcome (Cooper et al. 2006). It has been most effective on livestock farms, which have been the focus of 14 complementary payments in most Member States and where the contribution to farm incomes has generally been higher. There are variations between farms and Member States in the extent to which LFA payments contribute to incomes and in the income level required to maintain farming. It is difficult to be confident that the payments offered match these differentiated requirements suggesting that there is no uniform pattern of effectiveness. Some farms in the LFA rely heavily on compensatory allowances, or a combination of these and agri-environment payments, but support under Pillar One (agricultural support measures) makes a greater contribution to farm incomes in all Member States.

The measure has been more effective in maintaining land use than in securing the most appropriate forms of management with both intensification and undergrazing significant issues in some areas. Over intensive management in parts of the LFA in the 1980s was attributed to the livestock headage payments that were obtainable under Pillar One market support as well as the LFA. Such pressures have been alleviated by the change from headage to area payments and decoupling in Pillar One.
Changes in agricultural employment since the 1990s have been broadly similar in the LFA to those outside it. This indicates that LFA payments will have played a part in preventing a more rapid decline in the labour force in those Member States where they have been widely implemented.

The success of LFA and comparable agri-environmental schemes have formed the basis of the latest rounds of CAP reform, leading to an increased use of conditionality in payment schemes. It is expected that this process will continue through the next round of CAP reform starting in 2013.

The core message from the experiences in the EU is that successful support of rural areas under pressure has always been a combination of support on one hand and certain conditions on the other hand.

**Payment for environmental services**

During the last two decades, economic instruments have become increasingly popular to address issues that were formerly dealt with through command and control mechanisms. Payment for Environmental Services (PES) is an innovative approach in resource management that seeks to achieve any or all of the following goals: environmental integrity, poverty alleviation, and financial sustainability. The basic idea is that those who “provide” environmental services by conserving natural ecosystems should be compensated by beneficiaries of the service. PES has been implemented all around the world, trying to jointly address poverty alleviation and sustainable management of natural resources (Landell-Mills and Porras, 2002; Pagiola et al., 2002, Hope et al., 2005). Popular markets where PES has been implemented include, among others, watershed services and carbon sequestration. The core of PES is internalizing externalities through a pricing system. Very often less favoured areas provide ecological services free of charge. Environmental degradation in less favoured areas might bring about high costs to beneficiaries of services that can no longer be provided. Hence payment for those services is in order.

In the context of developing strategies to address the issue of climatic change in Tunisia for example (Pillet et al, 2006), it has been stated a number of times that there is a clear necessity for making the value of eco-systems more explicit. Watershed management to protect scarce water resources is one such area where the value of the eco-system is at present not fully
appreciated. In watershed protection, the basic concept in PES is to establish, through a payment system, a connection between the providers of water-related services who are the upland dwellers, and the downstream users or beneficiaries of the environmental service. By establishing a market mechanism, the suppliers of environmental services (who are often poor) can be compensated (i.e. payment for environmental services or PES).

Related to watershed management but not exclusively limited to this issue is the protection of forest resources. Many conservation stakeholders hope that PES generally would be more successful and cost-effective than indirect conservation approaches, such as integrated conservation and development projects (ICDPs). At the same time, PES could bring substantial livelihood improvements to poor, remote rural dwellers with few income opportunities. CIFOR has been assessing PES experiences in parts of the world (Bolivia, Vietnam and Ecuador, Indonesia and Costa Rica) (CIFOR, 2005).

Because many environmental services are intangible, developing (simple and straightforward) indicators to measure and monitor the environmental service is an essential element of a PES. Within institutional economics this component is usually classified under the umbrella term transaction costs.

These environmental services are the goods and services that are provided by nature (sometimes also labelled “functions of nature”). Because these services have a public good nature and market failures are common for such services, governments have usually taken up the responsibility of maintaining them. However, during the past decade, more attention has been given to establishing markets as a more effective and efficient form of reducing market failure. With market based instruments, policy-makers hope to combine the maintenance of environmental services with reduction of poverty, by linking the demand for these services (e.g. improved water flows, storage of carbon) with the supply of such services (e.g. forest conservation by local communities, water management by upstream resource managers). By establishing a market mechanism, the suppliers of such services (who are often poor) can be compensated (i.e. payment for environmental services or PES).

The basic idea of a PES scheme is to create a market for an environmental good, for which there is no market (and therefore no market price). One of the market failures in the provision of environmental services is that the beneficiaries enjoy these benefits without paying for them (free-riding) or the inverse situation, where polluters or destroyers of environmental services do not compensate those negatively affected. In other words, PES schemes require
the allocation of titles de jure or de facto on environmental externalities benefiting third parties (environmental service). Thus, the system identifies economic agents (resource managers) in charge of positive environmental externalities, or “service providers”, and the benefited agents (or users). The establishment of cause-effect relations is required. In addition, PES schemes intend to establish an information flow between service providers and users to facilitate the market exchange between both types of agents (FAO, 2004).

Theory indicates that PES schemes can make both sellers and buyers of environmental services better off, and at the same time help to better protect the resource base. There is some confusion regarding what is a PES scheme and what is not. A simple definition describing the PES principles is proposed by CIFOR (2005): “a voluntary, conditional transaction with at least one seller, one buyer, and a well-defined environmental service.” The key elements in this definition are voluntary arrangement, conditionality, transactions, sellers, buyers and well-defined environmental or ecological service.

The notion of a voluntary arrangement vis-à-vis command and control type management of natural resources is linked to the paradigm that market based incentives are often more efficient than non-market instruments. For markets to function we need voluntary arrangements. This does not mean that the state cannot play an important role, very often the state will act as a broker between buyers and sellers of ecological services.

Conditionality – the ‘business-like principle’ only to pay if the service is actually delivered - is the most innovative feature of PES vis-à-vis traditional conservation tools. It is also the one element many real-world PES initiatives have trouble dealing with. Conditionality itself entails a number of key criteria that must be met in order to ensure its success. First of all there must be clear indicators for the condition that the environmental service has been provided. Secondly, there must be a system in place to monitor the indicators. Thirdly, there should be a balanced relationship between the costs of monitoring and the payments for the ecological service. The costs of monitoring are part of the transaction costs of PES.

For transactions to take place there must be some level of institutional basis for these transactions, in addition to the market clearance. The institutional arrangements relate to the definition of the property rights related to the natural resource. Unclear relationship about access, extraction, management and exclusion rights may often hamper the success of a PES scheme. Market clearance refers to the fact that the costs of the management of the natural resource by the sellers should be lower than the opportunity costs of non-management or
other forms of management. In addition the willingness to pay for the provision of the service should be higher than costs, taking into consideration not only the direct costs but also the transaction costs involved in both PES and alternative mechanisms. The final component of transactions that play a role here is organization of the market. The market is not a traditional one and will often involve an intermediary or broker. This role can be played by a private sector party taking a commission, an NGO or by the state. Transactions will only take place if intermediaries can build trust between buyers and sellers.

The sellers of the environmental service are actually those who manage the resource in such a way that it can adequately provide the ecological service that is desired by the buyers. They should have management rights to the natural resource providing the ecological service. PES may best suit areas with intermediate and/or projected threat scenarios. This is the case in marginal lands with moderate conservation opportunity costs where a relatively modest subsidy can help tip the balance in favour of more desired land use. People facing or exercising moderate, credible environmental threats are more likely to become PES recipients than those already living in relative harmony with nature. Although paying the latter may be perceived as ‘fair’, it does not create additional ecological service provision.

Poor PES recipients are generally likely to gain from participation, unless their access to PES is restructured. Non-income gains of participants may include improved internal organization, consolidated land tenure and better visibility vis-à-vis donors and public entities. Non-participating landless poor could lose jobs in those PES schemes that reduce service-degrading production forms, such as logging, charcoal making, and land clearing for agriculture.

The buyers of the environmental service are beneficiaries who do not have the possibility to manage the resource themselves directly, either due to property rights relationships or due to high transaction costs (e.g. remoteness of the natural resource providing the ecological service vis-à-vis the location of the beneficiaries). We feel that service buyers, not service-selling smallholders and communities, will be the main driving force behind the expansion of PES.

Finally the ecological service to be provided should be clearly defined. Human pressures on natural ecosystems are rising and environmental services previously provided ‘for free’ become scarcer, thus increasing the scope for PES. But users will only pay if schemes can demonstrate clear additionality vis-à-vis carefully established baselines.
There are several pitfalls that have been signalled in the literature on PES. Although the private sector has a significant PES potential, it may be wasted if schemes become overloaded with side-objectives, especially vis-à-vis poverty alleviation.

We will take a closer look at some of the institutional issues related to PES schemes, mentioned above. A crucial aspect in PES schemes is information on the environmental service provided, which is the basis for payments. Because many environmental services are intangible, developing (simple and straightforward) indicators to measure the environmental service constitutes an essential element of a PES. Within institutional economics measuring these indicators is classified under the term transaction costs. In short, transaction costs include contact, contract & control (North, 1990, p28-33):

1. Cost of measuring the valuable attributes of what is being exchanged. Individuals engaged in a transaction need to know what they are buying. This may be difficult, because of asymmetric information: resource managers on one side of the market have much better information than those on the other side. This can apply to PES schemes, whereby the supplier has better information on how he/she manages water resources than the demand party.

2. Costs of protecting rights. Property rights of individuals over assets consist of the rights, or the powers to consume, obtain income from and separate from these assets. Exchange involves the mutual ceding of rights. The rights people have over assets are not constant; they are a function of their own direct efforts at protection, of other people's capture attempts, and of government protection (Barzel, 1989). Protecting rights over environmental services can involve high costs because of its transient nature. In this respect it is useful to refer to the classification of bundles of rights developed by Ostrom and others (Schlager and Ostrom, 1992). In their paper they distinguish between five types of rights that are bundled in a property rights regime, namely:

- **Access rights**: the right to enter a defined physical property;
- **Withdrawal rights**: the right to obtain the “products” of a resource, both in terms of goods and (environmental) services;
- **Management rights**: the right to regulate the internal pattern of usage and the transformation of the resource;
Exclusion rights: the right to determine who will and who will not have access, withdrawal and management rights, and how those rights can and cannot be transferred;

Alienation rights: the rights to sell, lease, give-away or bequeath any or all of the above.

The first two components are the basic operational level rights. The last one is what is often seen as property rights in a very narrow sense. In the case of common-pool resources the last three can be considered collective choice property rights. This way of presenting property rights has proven very powerful to disentangle the complexity of common property regimes.

3. Costs of policing and enforcing agreements. Enforcement poses no problems when it is in the interests of the other party to live up to agreements. But without institutional constraints, self-interested behaviour will exclude complex exchange because of the uncertainty that the other party will find it in his or her interest to live up to the agreement. This problem is particularly relevant for agreements in which there are conflicting interests. Policing and enforcing agreements (or rules, laws etc) may involve substantial costs.

Discussion and conclusions

In this paper we present a brief analysis of both the macro and micro level ramifications of the poverty environment nexus. The paper argues that an important almost self-defeating issue is the existence of externalities related to economic activities undertaken on fragile lands. In order to address both poverty alleviation and the promotion of environmentally sustainable development, approaches are needed that induce rural households to protect the fragile resources. The analysis has two distinct components. The first is the existence of exogenous and / or autonomous drivers that shape the development pathways of less favoured areas. The second is that there is a structure within less favoured areas consisting of agro-climatic conditions, relatively high levels of population compared to the varying capacity and poor or unequal market access that leads to unsustainable resource use patterns. The first part of the analysis justifies support of less favoured areas to create a somewhat more level playing field, the second justifies a targeted approach based on support to activities and investments that enhance a more sustainable development pathway. In order to do so support must be accompanied by conditionality regarding sustainability criteria.
New approaches to rural development based on conditional incentives offer scope for breaking the vicious circle of poverty and environmental degradation. Two approaches that fall within this realm were discussed: the LFA payments in the EU and Payment for environmental Services.

The primary reasons to apply such an instrument as part of a rural development and agricultural sector policy are:

- Support of target groups without introducing subsidies that have a too large distortion effect on markets.
- Payment for non-tradable environmental, and socio-cultural services.
- Public private partnership in achieving public goals through private benefits. It entails the provision of public goods.

Although the idea is to introduce support in a way that is not market distorting, there always remains an important risk in this respect. Especially in the absence of well defined non-tradable environmental and socio-cultural services that are provided in return for the income support. This is why these main reasons must coincide in order for effective income support to come into place.

How can targeted conditional income support be effectively implemented is the key issue in light of the remarks made in the previous section.

- Clear a priori eligibility criteria. By this we mean that the target groups should be very clearly defined.
- Clear ex-post conditions. By this we mean that the conditions that the target population have to meet in order to receive the income support should be well defined.
- Clearly defined legal framework. This type of innovative policy instrument usually requires adaptation of existing legal frameworks in order for it to function properly.
- Clearly defined operational rules. The operational rules include the methods by which compliance with the conditions for the income support can be monitored and controlled. This is one of the most crucial components of the operationalisation.
- Consistency across levels. Because we are dealing with an instrument aimed at individual households or groups of households while trying to solve (conflicting) social, economic and environmental problems there are different levels of aggregation.
to take into account. There are the general policy goals that are set at the highest level. In the case of the EU these are the general conditions for certain measures. At a more decentralized level, in the case of the EU, at the level of member states, specific additional conditions can be set within the overall framework. These conditions must be consistent with the aims of the measure.

- **Appropriate incentive structure.** In order for effective use of the instruments the incentives for participation should be appropriate. Ideally there is a direct link between the services rendered by the farms and the rewards obtained. With the LFA measure in order to prevent land abandonment, payment was linked to continued agricultural land use. In places where management of the rural landscape was more important, payments were linked to good agricultural practices.

- **Provision of essential services.** Very often there are underlying problems in terms of inadequate provision of essential public and/or private services that drive farmers to practices that are undesirable from society’s point of view, hence the provision of these essential services should be party and parcel of the implementation of the measure.

The core message from the experiences in the EU is that successful support of rural areas under pressure has always been a combination of support on one hand and certain conditions on the other hand. The core of PES is internalization of externalities. The basic idea is that those who “provide” environmental services by conserving natural ecosystems should be compensated by beneficiaries of the service.

**References**


