

報告番号	※	第	号
------	---	---	---

## 主 論 文 の 要 旨

論文題目

**Environmental Degradation, Poverty, and Local Participation in Pro-Poor Payment for Environmental Services: The Case of the Citarum Basin, Indonesia**  
 (環境悪化、貧困、および貧困削減にむけた「環境サービスに対する支払い (PES)」への住民参加：インドネシア・チタルム川流域を対象として)

氏 名

SAN MIGUEL BORBELY Patricia Alexandra

## 論 文 内 容 の 要 旨

The rapid degradation of the ecosystem has brought to the table alternatives like market mechanism instruments based on the environment commodification to bring solution or amelioration of current environmental situation. Payment for environment/ecosystem services (PES) is a relatively new tool to respond to such degradation, fervent to be extended in wider international scope after successful results experienced in various Latin American countries. Particularly, the case of Costa Rica has been highlighted as a pioneer case, inspiring other countries to pursue this scheme and influencing the growing interest of the programs, evidenced through an increasing number of projects around the world. Nonetheless, replication of these schemes in other contexts has not been easy, but characterized by gaps between the theoretical framework and the reality, thus caution is to be exercised when replicating these program in different continents that excel great differences.

Considering the previous one, the dilemma deepens when trying to incorporate important contextual elements like the inclusion of the poor, mostly present in rural contexts of many Asian areas. The latter is a challenging region where most of the world population lives and where most of the rural dwellers are exposed to the rapid trend of environmental destruction. The inclusion of the poor and the so-called pro-poor aspects in the program are applauded by a group of scholars who claim that the perception about fairness and inclusion in the program is a key factor to determine feasibility and legitimization. Implementation of PES with pro-poor or fairness characteristic also pose questions regarding the delivery of the ecosystem service and the sustainability of the program if this over-focuses on poverty alleviation and does not achieve the desired environmental improvement. Attempts to achieve an efficient and fair PES have been conducted in some Southeast Asian countries, proving that precondition for the Coasean conceptualization of PES could not be met, also demonstrating no measurable changes in the livelihood of participants regarding poverty alleviation.

Considering rural realities of countries like Indonesia, the obvious importance of the inclusion of the poor stands up, however I argue that the mere inclusion of the poor in such program is not enough if socio-economic factors that affect the poor's livelihood are not well understood in a program based on a voluntary basis. Factors influencing participation of farmers were well reported in many Latin American case studies, but literature lacks in the context of Asia and particularly in Indonesia where programs are still at an initial and limited stage, but where national authorities demonstrate interest. Therefore, the purpose of this study is to identify and understand socio-economic factors that influence the participation in PES program and its workability and expansion regarding pro-poor aspects, without jeopardizing the environmental service delivery. In order to address the stated issue, the following sub-research questions are tackled. (1) What are the characteristics of the PES program and the principal gaps between theory and practice? This question is addressed in chapter 3 and it alludes to one of the pro-poor aspect, 'process' as well as to the workability of the program to deliver the environmental service. (2) What are the characteristics of participants and non-participants and what kind of variables influence participation in the program? This part analyzed in chapter 4 attempts to focus on both 'access' and 'decision-making' aspects of the pro-poor PES. (3) What kind of factors influence farmers' viability to continue the program and how farmers cope with vulnerability and other constraints towards PES workability? This questions aims to elucidate the importance of not only participating in the program, but also continuing it as part of an approach to achieve desired 'outcomes' and aspire for expansion. This point is addressed in chapter 5.

This study employs a case study as it best fits its aims at understanding a real life phenomenon encompassing contextual conditions. In order to understand the objective of this dissertation, the sustainable livelihood capital framework is employed as it best suits the objective, evaluating factors that affect participation and continuity of participants in the program. Methods for data collection include semi-structures and in-depth interviews, group discussions, household survey, and the compilation of secondary data. Analysis includes both quantitative and qualitative methodologies as ways to strengthen and complement results.

Chapter 3 presents a contextual description of the basin and Suntenjaya village where the program is implemented, contrasting the practical implementation with the concept and criteria offered by Wunder along with other scholars supporting part of the pro-poor elements. This case presents variances that exist between the current practical scheme and PES characterization. While this program underlines the importance of responding to environmental services (ES) providers' interests and necessities, caution needs to be employed so that variances do not compromise part of the program's objective of environmental service delivery and program's workability. Important gaps include, first, the vague environmental service. Strategies for achieving the desired goals of reducing erosion seem to be weakly defined due to difficulties at stating causality linkages between

farmers' duties, and ES delivery. Although this diminishes the efficiency of the program; it does not compromise the whole ES delivery and its enhancement. Since pro-poor PES also involves the promotion of fair aspects of participants, farmers fulfilling the contract must be acknowledged for their contribution to the ecosystem and therefore be financially rewarded. Second, this program demonstrates the misunderstandings that ES beneficiaries or buyers have about the PES concept. Beneficiaries tend to act as donors making social and environmental contributions and pay little attention to follow up of the conditionality aspect. In fact, the lack of measurable results could be closely related to the weak conditionality of the program. Even though this is important to be considered for future correction, as an initial and experimental stage it could be acceptable as a way to promote the understanding of these new schemes since setting clearly the role of all stakeholders may be difficult and lengthy. In terms of fairness or pro-poor factors, at the process or planning level, evidence presented in chapter 3 suggests that stakeholders should be active to voice their necessities and realities, and work together with specialists to promote the development and successful realization of the program.

While many cases studies in Latin America highlight financial factors as important consideration that limit or promote the interest of participation, principally regarding the cash gains participants obtain from the program, scholars studying other environmental programs different than PES, also refer to the importance of non-financial factors like social networks when joining different projects. In this sense, this study, through the sustainable livelihood approach gathers different variables within different capitals or assets to elucidate the influence of physical, natural, human, social and financial capital. Limitations are encountered when aiming to cover a wide range of variables, however evidence through quantitative and qualitative analysis point the important role of social networks as a possible influential factor for participation. The recognition of the influence of social variables is important towards understanding new forms of PES schemes, like the pro-poor one, that tends to move away from the pure market approach. Concerning characteristics of PES participants and non-participants ones, important differences are found on possession of limited land size, income, and tools to work the land, as factors playing important role regarding feasibility in participation. Inevitably the poorest of the poor might be out of these programs without necessarily meaning that the pro-poor essence is jeopardized, as seen on the various elements of pro-poor programs. Differences based on social aspects are fundamental and most prominent at characterizing the two groups and therefore influencing their participation in programs that require collective action. Association and social networks in particular, allows farmers to obtain relevant information to act together to address common environmental or social problems, as well as to participate and implement PES programs. On the other hand, weak social networks tend to disadvantage the flow of information to activate synergies to participate in PES. These findings evidenced in chapter 4 do not fit to those findings presented in Latin American PES cases where their focus was on the efficiency of the program. However, these

evidences could be significant not only for this specific case, but be considered in other programs that regard pro-poor elements in the Asian region.

Understanding factors that influence PES adoption constitutes an important element to further scale up and develop these programs. However, accessibility to PES is not the sole element guiding the development of the program, as uncertainty and risk commonly characterize poor rural settings where things do not go smoothly for farmers. For a program's viability for continuity and/or sustainability over time it is imperative to consider how vulnerability to poverty and its risks affect farmers' livelihoods and the way they develop and continue PES. Although financial assets seem to not be very influential at the time of decision making to join PES program, this study finds that financial assets that encompass income, land size, other side jobs and livestock seem influential in farmer's viability to continue the program. The poorest with less access to previously stated assets seem to be more vulnerable and more likely to abandon the program in case of crisis. Income and land size mark the biggest different between those who continue and those who quit the program, constituting essential factor influencing the continuity and development of PES, even with pro-poor characteristics. Other important element influencing the continuity of the program regards the price fluctuation of the main crop to be adopted, in this case coffee. In order to manage the effects of the latter, it is imperative to count with the intermediary agency support in implementing PES through supplementary trainings to add value to farmers' products and gain access to the market through different strategies like cooperatives creations and marketing tools consolidation.

As part of the opportunities and limitations learnt in this study, the following is emphasized. It is possible to implement PES at a lower cost than what economist would calculate from valuation methods, and this is reflected to be true due to social aspects that bound the community together, like social networks, among others that may facilitate the participation in the program. Nonetheless, common constraints present in rural areas, as poverty, demand continuous support throughout the whole program, in forms of training and capacitation allowing farmers to understand the management of PES and to have access to other possibilities that could increase their livelihood diversification and provide access to market that could help reduce financial vulnerability, and possibly improve farmers viability to continue PES. If these considerations along with governmental support encompassing the development and compliance of clear rules to manage environmental resource without excluding the people are offered, programs in this area may advance from the experimental and limited scope stage. Alternative and complementary programs could help alleviate the poor and possibly encourage participation of a wider number of farmers in the program. This case encourages further research like numerical simulations to measure outcomes and efficiency of the program, revision of the distribution and size of participants' areas and relation with efficiency and fairness aspects, and a comparative analysis with other programs in the country that could support understanding of this subject.