



**Costa Rican Payment for Environmental Services:
between international and national influence, a feedback analysis**

Le programme de paiement pour services environnementaux au Costa Rica : entre influence internationale et apprentissages nationaux. Une analyse en termes de feedback

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Abstract

As a pioneer program using notion of PES, Costa Rican Payment for Environmental Services Program (PESP) has been analyzed as a very promising innovating instrument for conservation and has been considered as a reference for PES schemes. In fact, an important array of information and knowledge has been produced on the PESP by a variety of actors. Since his beginning, the PESP has changed (target groups, modalities...). This communication aims at providing a better understanding of the links between knowledge generation, learning processes and policy change. We identify six pathways of feedbacks, with internal or external dimensions. We show that despite the large external knowledge generation on PESP, the internal pathway linked to the classical Costa Rican policy process and control authorities is the most influential in PESP transformations. The communication invites to consider a multiple complex of learning process where both dimension, internal and external, are intertwined and interacting to explain policy changes..

Keywords : Costa Rica, Environmental services, policy change, learning process

Résumé

Ce document s'appuie sur les résultats de travaux de recherche entrepris entre 1998 et 2007 en Costa Rica. Considéré comme programme pionnier dans son domaine, le Programme de paiements pour services environnementaux (PPSE) du Costa Rica a été souvent qualifié d'innovant et souvent pris en exemple pour ce type d'intervention type de Paiement pour service environnemental (PSE). Une importante littérature existe sur ce programme. Depuis son lancement en 1996, le PPSE a évolué dans ses modalités de mise en œuvre. Cette communication cherche à mieux comprendre les liens entre production de connaissance, apprentissages et changement de politique. Nous identifions six « mécanismes de feedback » combinant des dimensions internes et externes. Nous montrons que, malgré l'importante production externe de connaissance sur ce programme, les principaux changements du PPSE sont liés à des processus d'apprentissage internes au Costa Rica. Le document invite à prendre en considération la complexité des processus d'apprentissages, aux dimensions internes et externes, qui s'articulent pour expliquer le changement dans les politiques publiques.

Mots clés : Costa Rica, Services environnementaux, changement dans les politiques, apprentissages.

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1 Introduction¹

Over the past decade, Payments for Environmental Services (PES) have received a great deal of attention as a natural-resource management approach (Engel et al., 2008; Landell-Mills and Porras, 2002a; Muradian et al., 2010; Pattanayak et al., 2010; Wunder et al., 2008). Wunder (2005, 2007) defines PES as voluntary transactions where a well-defined environmental service (ES) (or a land-use likely to secure that service) is being “bought by a minimum of one ES buyer from a minimum of one ES provider if and only if the ES provider secures ES provision during a determined time (conditionality)”. Pure PES schemes fulfilling all the criteria of Wunders definition may not always be possible, or even preferable (Corbera et al., 2007; Wunder, 2005). More recently, scholars have analyzed the institutional nature of PES, underlining the importance of the institutional and social context in which it takes place (Muradian et al., 2010; Sommerville et al., 2009; Vatn, 2010). They usually consider PES as a social construction, reflecting a certain distribution of power among stakeholders, while often emphasizing the need for legitimacy as an important driver of its design and evolution (Corbera et al., 2007; Pascual et al., 2010).

As a pioneer program using notion of PES, Costa Rican Payment for Environmental Services Program (PESP) has been analyzed as a very promising innovating instrument for conservation and has been considered a reference for PES schemes. Indeed, launched in 1997 in order to incentive reforestation, forest conservation and sustainable forest management, the program has channelled more than two hundred million cumulative dollars invested, and over 700,000 ha of forest have been contracted in the program (some 13% of the national territory). Many scholars described the PESP as an innovative market based instrument for conservation (Pagiola, 2008; Pagiola et al., 2002; Rojas and Aylward, 2003) and discussed its efficiency (Daniels et al., 2010; Sánchez-Azofeifa et al., 2007; Zbinden and Lee, 2005). The Costa Rican experience is analyzed as a PES-like scheme, as government and public institutions play a key role in its governance (Muradian et al., 2010). However, PESP governance results from a complex interactions of multiple stakeholders (Le Coq et al., 2013). The specificity of this program is that it is rooted in a national law and was institutionalized since its beginning (Le Coq et al., 2012). However it has evolved overtime (Le Coq et al., 2011). Through internal and external policy feedbacks and learning processes, local and international actors, public and private ones, have interacted to shape it.

In this paper, we propose to identify and analyze the influence of internal (country level) and external (international) policy feedbacks and learning processes that shape the PES functioning overtime.

The second section presents a general framework to analyse policy feedback and learning process. Then, the section 3 describes the different feedback pathways around PESP and detailed the different internal and external dimension of learning process and feedback around this program. We then conclude about how to pursue this research agenda on knowledge generation, policy learning and policy change.

2 Policy feedback and learning processes

Policy feedback is a concept linked to historical institutionalism which is “based on a few key claims: that political processes can best be understood if they are studied over time; that structural constraints on individual actions, especially those emanating from government, are important sources of political behaviour” (Pierson, 1993). For Pierson, policy feedback is a general label behind which lie a range of arguments to explain that “policies produce politics”, through different ways, providing resources and incentives for political actors (interests groups, bureaucrats, politicians,

¹ This document was presented to the 10thbiennial Conference of the European Society for Ecological Economics (ESEE) “Ecological Economics and Institutional Dynamics”, held in Lille, June 2013.

mass publics,). Policy Feedback may lead to policy change but also to lock-in effects. Finally, Pierson identify two main feedback mechanisms (resources/incentives effects and interpretive effects) and three sets of actors affected by theses mechanisms (government elites, social groups and mass publics). Then, six pathways of influence from policy to politics can be defined (Fig. 1).

Fig.1. The dimension of policy feedback

		Actors Affected by Feedback Mechanism		
		government elites	interest groups	mass publics
Type of Mechanism	resource and incentive effects	administrative capacities	“spoils” organizing niches financing access	“lock-in” effects
	interpretive effects	policy learning	policy learning visibility/ traceability	visibility/ traceability

Source: Pierson, 1993

In our case, we focus on policy learning processes, linked to “interpretive effects” in the Pierson framework. Feedback and learning processes are often associated to evoke the fact that “a policy is adjusted and improved without changing the goals, instruments and/or the policy actors” (De Vries, 2010). In particular, policy learning as a “relatively enduring alteration in policy results from policymakers and participants learning from experience with similar policies”: this behaviour can result in a variety of feedback-like learning processes that affect the behaviour of subsystem members (Bennett and Howlett, 1992; Howlett and Ramesh, 2002).

Concerning the Costa Rican programme PESP, we mainly focus on the learning and feedback processes that lead to change in the implementation modalities of the program. More precisely, we try to capture the role of knowledge generation on the changes observed within the PESP but also in the circulation and transfer processes which contributes to the dissemination of the “PES mood”. Two main questions could be:

- Does the generation of knowledge on the PESP have any role in the change of governance and implementation modalities throughout the program? (internal dimension)
- How the generation of knowledge on the PESP plays role in the transfer process of PES models around the world? (external dimension)

The first question refers mainly to policy learning process. Policy learning is well analyzed in case of policy diffusion within federal states to understand the variation in policy implementation at local level (Shipan and Volden, 2008; Wolman and Page, 2002) or to analyze policy convergence, for instance within Europe (Bennett, 1991). Researches on learning process distinguish three types of learning mechanisms and three main questions: who learns, learn what and to what effect (Bennett and Howlett, 1992) (Fig. 2).

Fig 2. Types of learning and policy change.

LEARNING TYPE	WHO LEARNS	LEARNS WHAT	TO WHAT EFFECT
Government Learning	State Officials	Process-Related	Organizational Change
Lesson-Drawing	Policy Networks	Instruments	Program Change
Social Learning	Policy Communities	Ideas	Paradigm Shift

Source: Bennett and Howlett, 1992

The second question refers to policy transfer studies. For Dolowitz and March, policy transfer are “the process by which knowledge about policies, administrative arrangements, institutions and ideas in one political system (past or present) is used in the development of policies, administrative arrangements, institutions and ideas in another political system” (Dolowitz and Marsh, 2000). Costa Rica could be considered mainly as a source of knowledge for policy transfer, as its PESP model has been one of the first PES national program. But Costa Rica also receives some feedback from international level: donors for instance (World Bank, bilateral donors...) play an active role in promoting some new ideas in Costa Rican policy systems. In this paper, we will not focus on this policy transfer dimension around of PESP experience that has been developed in other studies (Hrabanski et al., 2011; Le Coq and Méral, 2011) but we will identify some first steps of transfer process from Costa Rica and focus on some pathways of influence from abroad.

3 Results

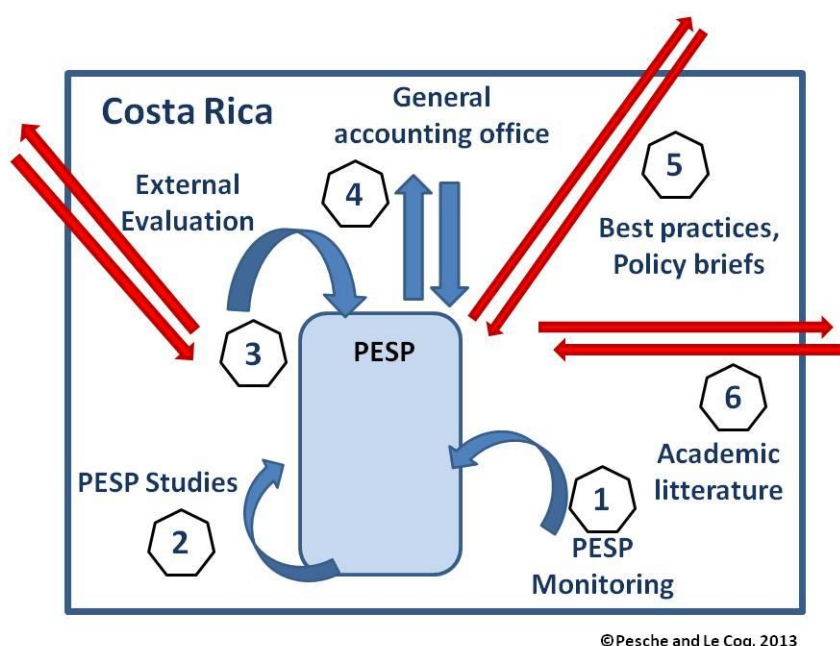
3.1. The feedback pathways of PESP

Based on stakeholder’s interviews and a review of grey materials of public or private expertise and consultancy generated around the program, we identify 2 main scales of feedback processes that shape the program along its 15 year of functioning: national (internal) and international (external) dimension.

Both internal and external dimensions are often closely intertwined in what we called the “feedback paths”. We identify 6 main “paths of feedback and learning process” (Fig. 3):

1. The monitoring system of the PESP as such. This system evolved under the influence of “Ecomercados” projects (external) but not only. New criteria and indicators were added for a closer monitoring of the PESP activities. The knowledge produced by the monitoring system nourishes the PESP management but also other studies or evaluations.
2. Technical or scientific studies realized by academic or local or international consultants or. These are often linked to demand of or donor or national institutions.
3. PESP capitalizations for wide dissemination mainly targeted to international cooperation actors. Such document tends to build a narrative on PESP, as the pioneering and reference experience of PES.
4. PESP assessments by institutions such as the Government accountability office of Costa Rica (*Contraloría General de la República*), as required according to the law #7575 , as PESP is a public program.
5. PESP assessments as part of the project cycle document of the World Bank or other donors.
6. Academic literature on ES and PES are growing rapidly since 2000-2005. Within this literature, papers on the Costa Rican experience are frequent (Schomers and Matzdorf, 2013) and this academic production shape also the common knowledge on the PESP.

Fig. 3. Six main feedback pathways in knowledge production and learning processes of PESP in Costa Rica



Source: Authors based on stakeholders interviews

The feedback pathways 1 and 2 tend to be more national-driven, the 3th in a mix of national and international processes. The 4th feedback pathway is pure national and seems to be the most influencing on PESP evolution. The feedback pathways 5 and 6 are a more “international processes”, linked to the international aid programs.

In the following session, we analyze the different pathways of learning and feedback processes on one hand the external ones and, on the other hand, the more internal ones.

3.2. External dimension of knowledge generation, learning and feedback processes

In the external dimension of knowledge generation, learning and feedback processes, we can highlight two dimensions, the processes that influence the PESP and the process of dissemination of PESP knowledge.

- ***PESP learning and external feedback***

Following Richard Rose, we observe that international organizations play a key role in the process of ideas circulation at international level and between international and domestic level (Rose, 1991). In the case of Costa Rica, organizations like Regional Unit for Technical Assistance (RUTA)², Inter American Institute for Cooperation in Agriculture (IICA),) and the World Bank (WB) have played a specific role in the PESP (Nelson Espinoza et al., 1999). Think tanks also are active in the policy transfer (Stone, 2000): IIED (International Institute for Environment and Development – UK based) is a good example of an international NGO, acting as think tank, which played a key role in capitalization of information about the PESP (Watson et al., 2008) or, more specifically, in the diffusion of market based instruments for forest sector (Landell-Mills and Porras, 2002b). During the ninetieth, the IIED manage a research program on economic valuation in environmental

² Ortiz, E. et al. 2003. Impacto del Programa de Pago de Servicios Ambientales en Costa Rica como medio de reducción de la pobreza en medios rurales. Unidad Regional de Asistencia Técnica (RUTA).

management³. The high level civil servants of Costa Rica were also active in the dissemination of PES at international level⁴.

The closer international sphere at regional level is also active in information and knowledge production and diffusion about PES programs. At Centro American level, feedback processes are also produced by a diversity of organizations. A local Foundation/NGO based in El Salvador, Prisma, was involved in a capitalization process on PES schemes funded by Ford Foundation⁵. In the Prisma website, this think tank activity is well resumed: "PRISMA Foundation conducts researches, produces publications and promotes policy dialogue. PRISMA is committed to creating opportunities for dialogue between different actors and perspectives, approaches and different viewpoints, fostering interaction between various actors (community associations, government officials, NGOs, academics, etc.), Representing different actors and disciplines, and engaging a variety of levels (local, regional, national, regional and global). This approach promotes the identification of innovative themes, providing new insights into dynamics of most importance for policy design. In short, PRISM serves as a platform for dialogue, critical analysis and action"⁶. The dynamics of the Mesoamerican Biological Corridor strengthen these exchange of experiences and learning process at Centro American level (Mejias and Segura, 2002). The European Union also supported a study on PES schemes (Etcheverria, 2009). Those initiatives indicate the growing importance of regional level in policy processes.

At global or regional level (Central America), donors and stakeholders involved in international cooperation play an important role in policy transfer and learning processes. Some bilateral donors like United Kingdom, Holland or Germany has played an important role in producing and disseminating knowledge in the 90th through some project as the COSEFORMA project or KFW in the North zone of Costa Rica (GFA Consulting Group, 2008). Just after the beginning of the PES, the German cooperation realized a study on funding mechanism for environmental management in Costa Rica (Heindrichs, 1997). Multilateral donors are also key players in knowledge production and diffusion: in Costa Rica, the World Bank (WB) is involved in the forest sector since 1991 (de Camino et al., 2000)⁷ and more deeply with his participation to the PES through the "Ecomarkets Projects" 1 (2001-2006) and 2 (2007-2012). United Nation Development Program (UNDP) brought some expertise and means to organize workshops. Some of the WB staff (such as Stefano Pagiola, Paul Ferraro, Gunars Platais, Ernst Lutz) has also reframed their knowledge through more academic products, contributing to the broad dissemination of the Costa Rican experience of PES through non academic ((Ferraro, 2008; Pagiola et al., 2002; Pagiola and Platais, 2007; Pagiola and Platais., 2002) or academic publication (Pagiola, 2008; Pagiola et al., 2005).

All of these mechanisms of knowledge generation and/or diffusion about the Costa Rican PES correspond to our 5th and 6th pathway of feedback (Fig. 3). They also can be conceptualized as first steps of a policy transfer process from Costa Rica to international level and other countries. As we represent them on the figure 3, the knowledge and information flows are often in both ways: for instance, knowledge produced on the basis of PES analysis (for instance (Daniels et al., 2010) have probably few effects in the perception of PES by some actors at domestic level. Circulating ideas about PES have probably an indirect influence on PES reformulating: the focus on poverty alleviation or on gender issue, integrated in the PES through Ecomarkets projects 1 and 2 are in the

³ The programme of Collaborative Research in the Economics of Environment and Development (CREED) was established in 1993 as a joint initiative of the IIED, London, and the Institute for Environmental Studies (IVM), Amsterdam.

⁴ Castro R, Tattenbach F., The Costa Rican experience with market instruments to mitigate climate change and conserve biodiversity, Presented at the global conference on knowledge for development in the information age, Toronto, June 25, 1997.

⁵ Rosa, H. et al. 1999. Valoración y pago por servicios ambientales: las experiencias de Costa Rica y El Salvador. PRISMA. No. 35. www.prisma.org.sv. Proyecto Pago por Servicios Ambientales en las Américas, PRISMA Fundacion Ford.

⁶ <http://www.prisma.org.sv/index.php?id=4>

⁷ This study provides detailed knowledge on the role of the World Bank in Costa Rica's forest sector.

mood of the global literature on PES efficiency and impacts. It is also one of the main conditions for WB funding support.

Using the Bennett and Howlett framework, we could identify two types of lesson drawing link with this international dimension. First, the adoption of a specific modality for indigenous people in 2007 can be classified as a “program change”, and be interpreted as a learning on policy “instrument” since it has been design learning from experience to overcome the specific situation of indigenous areas where land tenure is collective⁸. Second, the introduction of poverty impact target and women access objectives can be considered as a process learned, that conduct to an organizational change, as this change only modified the organization of the monitoring system but not strongly the design and implementation of the program and its instrument.

- ***Dissemination of PESP knowledge***

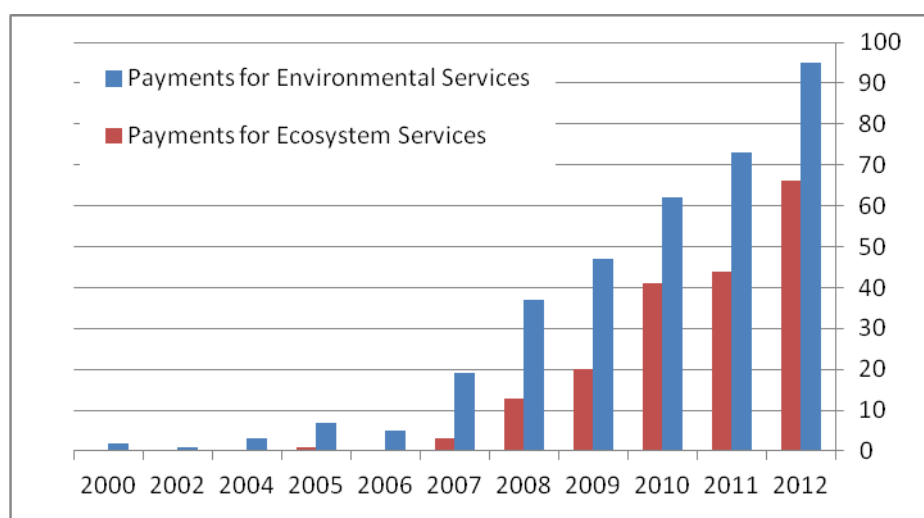
The second external dimension of the PESP knowledge generation, learning and feed back is the dimension of dissemination of PESP knowledge towards international forums and other countries.

In this dimension, an important pathway is through some key players that have been part of the management of PESP and that have later on developed consultancy activities or position inside international institutions. Biographic analysis of them allow us to identify some of this “intermediary” (or actors” and better capture their role on exportation and/or importation of ideas. That is the case, for instance, of: Jorge Rodríguez, Vice minister of environment since 2006 was international consultant for FAO and UNDP, or Carlos Manuel Rodríguez, former vice minister of environment (1998-2002) and minister of environment (2002 to 2006) who is now vice chair of Conservation International (CI) and play an important role for the dissemination of Costa Rican experience of PESP all around the world. Aside this actors that are in international institutions, some FONAFIFO staff that has been managing the program from its beginning also play a role in diffusion of information on the program such as for example Jorge Mario Rodríguez, the general director of FONAFIFO since 1998 or Oscar Sanchez, director of ES division, or Hector Arce, director of credit division, that have been working in Fonafifo since its beginning. These actors by participating in international congress or receiving visits play an important role in disseminating PESP experience.

Other pathway of knowledge generation and diffusion is the academic studies and literature. In fact, Costa Rica takes an important part in this literature: within the Scopus references including “payments for environmental services”, Costa Rica is present in 36% of the papers (and 26% of papers including “payments for ecosystem services”. This mode of knowledge generation and diffusion on PESP is rising recently, with a number of references on PESP published in journals increase dramatically since 2008 (Fig. 4).

⁸ The initial PESP recognizes PES only for landowner that is to say with private land individual title. In the case of indigenous area, there is no private land property but collective land property at community level.

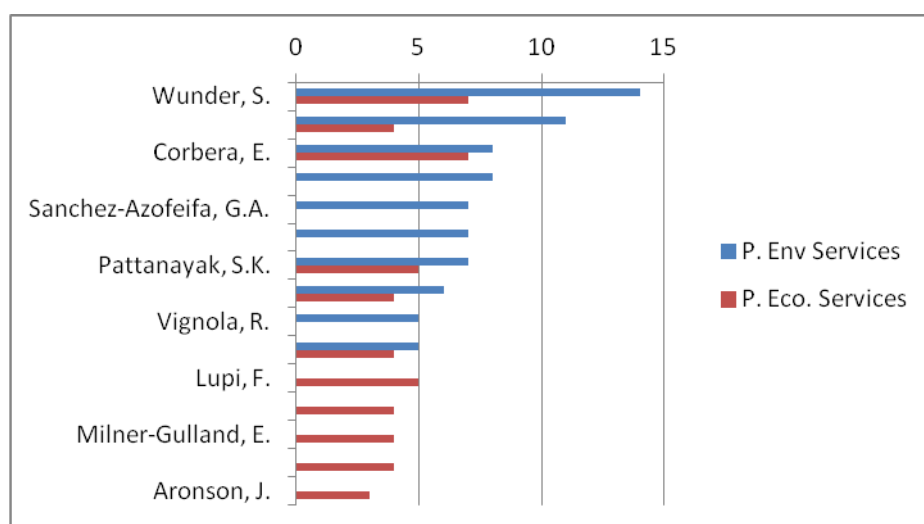
Fig. 4: Number of publications reference including PES and « Costa Rica »



Source: Authors, data from Scopus data base (consulted in May 2013).

If we look more precisely on the authors writing on Costa Rica (Fig. 5), we can noticed that some of the best ranked are quite involved in development institutions (such as World Bank) or research for development (such as CIFOR). The first author, Sven Wunder, has published 11 references only in 2008 (with 5 in the special issue n°65 of “Ecological Economics”). It seem that the literature on Costa Rican PESP remain strictly in the « small world » of a few scientists engaged in controversial debates on PES. Only few reviews concentrate the papers about Costa Rica: Ecological Economics, of course, and Land Use Policy, Journal of Environmental Management and Environmental Conservation. The combined effect of the recentness of PES literature and the containment of the debate in small circle tend to support the idea that the direct influence of academic literature on PESP governance is very limited and may be indirect through World Bank project design since 2008.

Fig. 5: main authors writing about Costa Rica (number of papers).



Source: Authors based on Scopus (May 2013)

3.3. Internal dimension of knowledge generation, learning and feedback processes

The internal dimension of feedback processes (domestic level) are based on the strong institutions of Costa Rica such as the General Accounting Office (*Contraloría General de la República* - CGR) but also on forestry and environmental NGO's (such as Fundecor) and scientific community (CCT). Some of these actors have also strong links with international levels.

We can distinguish two moments in the internal dimension of knowledge and, learning and feedback process: 1) the process before the PESP implementation, thus prior to 1997, and 2) the processes during the implementation of PESP, after 1997.

- **Knowledge generation, learning and feedback leading to PESP**

At the beginning of the 90th, some studies have had important influence on the environmental policy thinking and particularly on forest sector and Nature conservation. The Tropical Science Center (CCT - *Centro Científico Tropical*) is a scientific NGOs funded in 1962 and which played an important role in framing the links between conservation and economic issues. Supported by World Resource Institute, a project draw the bases for an economic valuation of natural resources degradation and how to integrate theses calculation into the national accounting⁹(Centro Científico Trópical and World Resource Institute, 1991). This study plays an important role for raising awareness about the importance of nature conservation¹⁰. Few years later, the same CCT realized another study on valuation of environmental services which was used to determine the level of remuneration for landowners within the PESP (around 50 US\$ by hectare) corresponding to the opportunity cost of extensive cattle raising (Carranza et al., 1996)¹¹.

The second sources of internal knowledge that existed prior to PESP and influenced the design are the experience of local projects that included experience of direct payment to farmers. Two specific projects implemented in the early 90th, were indirectly used as local references in PESP design: the REFORESTA project implemented by FUNDECOR¹² with USAID support in the central region, and the BOSCOA project implemented by Neotropica Foundation in the Osa peninsula, with The Nature Conservancy funding (Le Coq et al., 2012).

- **Knowledge generation, learning and feedback in the implementation of PESP**

With the implementation of PESP implementation, internal knowledge generation developed rapidly. Indeed, the PESP as program and FONAFIFO as the leading institution in charge of the management of PESP have produced a large numbers of studies and monitoring reports (around 250 from 1997 to 2008). Most of them are linked to national or local studies about the implementation of PESP. The analysis of the archive of FONAFIFO shows an acceleration of knowledge generation after 2001 (Fig. 6), probably linked with the World Bank Ecomarkets projects which imply complementary studies on different aspects (gender, indigenous people,...) and providing economic resources for this purpose.

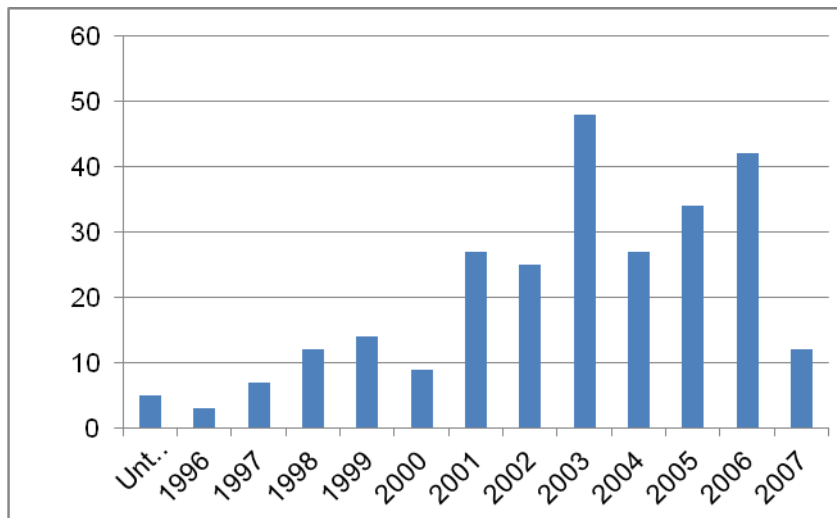
⁹ The World Resource Institute, a think tank based in Washington, was strongly involved in the Millenium Assessment process (1998 to 2005). This project was also funded by the Dutch government, Noyes foundation, IRDC Canada, USAID and the government of Costa Rica.

¹⁰ Interview with Jaime Etcheverría (CCT) and Raul Solorzano (CCT), May 2011.

¹¹ Study funded by the British government (ODA).

¹² FUNDECOR is a forestry environmental NGO that has been created in 1989 to promote conservation, reforestation and sustainable forest management in the central volcanic chain. This NGO benefited from important support from United State support agency (US AID).

Fig. 6. Annual distribution of internal reports on PESP (1995-2007)



Source: Authors. Based on data from FONAFIFO archives (until 2006/2007).

The PESP has an internal monitoring process to follow the implementation of payments through the numbers of contracts and management plans. This monitoring process provide also information about forest cover, forest area concerned by the PESP and broadly about indicators linked to the PESP manual of procedures (Saborio, 2001, FONAFIFO).

Aside but complementary to these reports, another mechanisms of feedback come though the internal meeting inside Fonafifo structure. For example, each month meeting between the different representatives of the regional office and the central administration take place in order to adjust the functioning of the procedure. Feedbacks from local situation also come from direct contact of local forestry organization toward to Fonafifo civil servant or through national forestry office to the board of Fonafifo. This exchange led to some administrative adjustment, for example to facilitate the treatment of the demand for PES a system of electronic appointment to avoid the landowner or regent to waste time waiting in queue to be attended by Fonafifo staff.

Some evaluations have been also developed in a more independent way and have affected directly the debate around the PESP. One example of this evaluation has been the evaluation of PESP implementation in Osa region carried out in the late 90th that shows the limits of forestry management plan in this region. This report, made by a pluri - disciplinary team of national scientist, has been used by the environmental / conservationists' interest groups to denounce forest management PES, which has been stopped in 2002/ 2003¹³.

Another important internal feedback is the reports from national institutions (pathway # 5). In particular the reports of the CGR have a particular status regarding their effect, as on the contrary from other reports, the conclusion and recommendation of this report are compulsory. The PESP managers have to respond to the recommendation and put them in practice. By the way report for the CGR has been followed by the most effect. For instance, it has change the status of FONAFIFO, that has pass from a *fundeicomiso* structure (i.e. private management) to a public management (including the creation of various area, as a public administration) this change led to the development of the institution from 25 to more than 100 person between 2008 and nowadays, and a raise of the % of Fonafifo administrative cost from 5 to 19 %. Nowadays, it also asks for a better

¹³ It was reactivated in 2010 as the importation of wood was increasing following the demand of national productive forestry sectors interests groups (Le Coq et al, 2013).

monitoring system that enables to monitor the effect of PESP not only in term of forest cover but in term of Environmental services and socio-economic impact.

Interview with PESP managers confirm that internal knowledge generation has had little impact on policy change within the PESP, but probably more to inform day to day management and legitimized the new orientation of the program (new modalities). They also confirmed that, the influence of feedback from General Accounting Office (*Contraloria General de la Republica*) knowledge generation is much more effective to lead in organizational changes, whereas changes in instrument are more a combination between internal learning and opportunity (case of regeneration modality created to grasp possible funding from carbon agreement).

The limits between external and internal local feedback are sometimes difficult to identify. Sometimes, one feedback facilitates another to be effective in policy change. For instance, the negotiation of Ecomercado 2 project in the national assembly, enable to foster the emergence of a new rules that enables the land holder without land title to access to PESP. This change seems to emerge as a meeting of different feedback, internal feedback from local peasant leader that claim for this, but also from international feedback, as the PES limit pointed out in the internal literature especially by the WB staff (Pagiola et al., 2005) was the land titling.

Finally, both external and internal feedback and learning process has played an important role in the evolution of PESP, and we argue that neither the internal or external pathways are more crucial to explain PES changes, but that changes occur when the combination of both types of feedback are reinforcing each other in the same direction.

4. Conclusion

The analysis of the production of knowledge about the PESP distinguish five pathway of policy feed backs organized into two dimension internal and external dimension. The production of knowledge on PESP has been important both on the internal and international dimension. The diffusion process of knowledge on PESP was mainly oriented toward the international sphere and was carry out by external actors (mainly from development institutions) and specific actors posted with direct experience in PESP hosted in other international institution. More recently, this dissemination process has also been reinforced by the civil servants of the leading institutions, and the internal academic literature. Although the importance of this external dimension of international knowledge generation and learning on PESP, the influence of international processes on PESP itself seems to be quite limited to some instrumental or organizational adjustments. On the other side, the internal dimension of learning process has been the most prominent driving force of the PESP evolution. The feedback of implementation leads to stronger and drastic organizational and instrumental adjustment of the program.

This analysis led to balance the importance of internal and external dimension of learning in the evolution of a national program. By the way, it also invites to consider a multiple complex of learning process where both dimension between internal and external dimension are intertwined and interacting to explain policy changes and lock in.

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