



www.fao.org

# Case studies on Remuneration of Positive Externalities (RPE)/ Payments for Environmental Services (PES)

Prepared for the Multi-stakeholder dialogue 12-13 September 2013 FAO, Rome

*This study focuses on the complexity of PES scheme embedment in public policies.*

*This factsheet describes and explicitly distinguishes three PES initiatives, and explain the reasons for such an evolution in the design of policy instruments aimed at protecting groundwater resources.*

## Payments for watershed services in Lombok, Indonesia: Uncovering actors' strategies in a "success" story

### Overview

Lombok is one of the driest Indonesian islands. Its population is mainly concentrated in the South West plain where the capital city Mataram is located (see map) with around 400,000 inhabitants. In the dry season from March to October, few rains hit the plain and the regional public water supply company (PDAM) uses water catchments located at the bottom of the Rinjani volcano that plays a key role in regulating water flows. Yet, 50% of the springs dried up after the volcano's hills faced deforestation at the end of the 1990s, and most stakeholders assumed that both facts were connected.

Therefore a process was initiated in 2001 with the financial and technical support of international agencies (USAID, UNDP, Ford Foundation) to develop Payments for Environmental Services (PES) aimed at reforesting the volcano hills and adapting local practices. A first PES scheme was set up by local NGOs (Konsepsi, WWF-NT) in the mid-2000s. Then the district government took the lead and issued a district regulation on "environmental services management" in 2007, which paved the way for the second stage in the establishment of PES from 2009 onwards. A third PES scheme emerged in parallel after 2011 when the regional water supply company decided to go ahead with its own approach, probably because of perceived ineffectiveness.

While the activities funded by the three schemes look similar in nature (watershed restoration and support to local communities), their institutional mechanisms are different. Money collection is either voluntary or mandatory, the legal frameworks differ, and the levels of funding are contrasted. The stakeholders holding power in all of these schemes also vary.

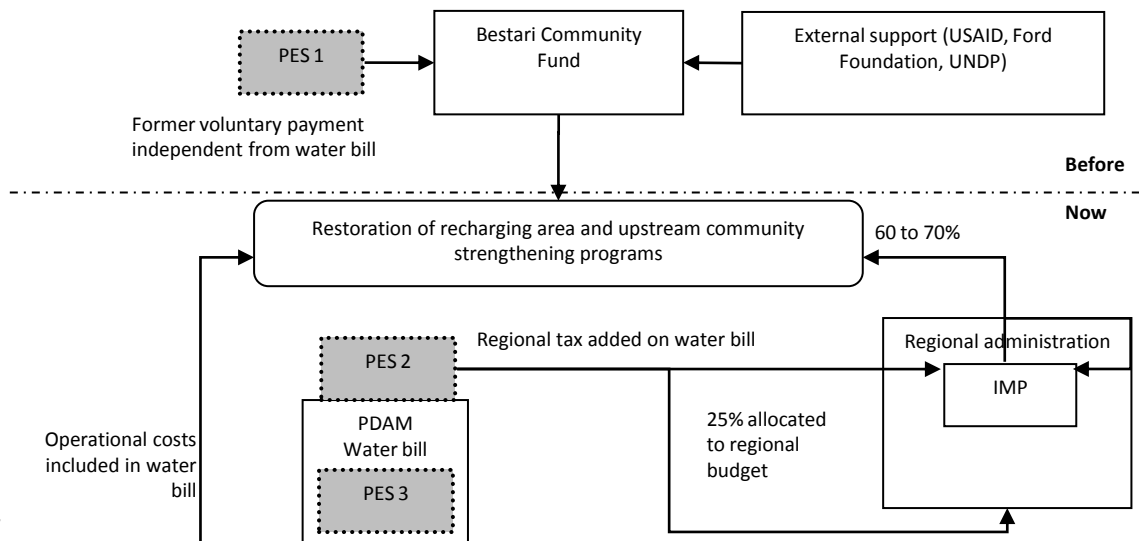


Figure 1: Overview of the three local PES

## Background

The decision to set up a PES scheme was clearly influenced by the international community that was keen to make use of innovative environmental management instruments. The Lombok scheme illustrates one of the first attempts to apply PES. These used to be presented as direct incentive measures with conditionality between providers and beneficiaries, according to the logic of the Coase paradigm whereby both sides would find common interests and negotiate to achieve an optimal situation. Yet, in practice things look different, and Lombok illustrates this trend well with a multilayered scheme. The three layers are presented below.

### *PES 1 – “voluntary payments” [1]*

The first scheme was implemented in 2005 by local NGOs in a pilot project logic, with the Bestari Community Fund established as intermediary between payers and beneficiaries, and was based on voluntary payments by water consumers downstream. It aimed at supporting local communities’ activities upstream for groundwater retention and filtration. An assessment of the willingness to pay for water consumers was thus done and yielded promising results; but money collection generated too high transaction costs. Hence a policy process was initiated for refinement with a different approach to money collection.

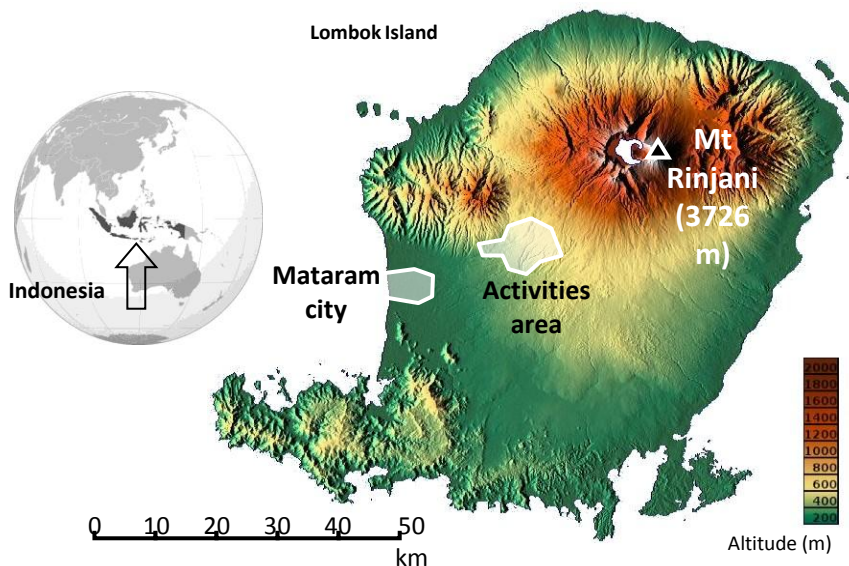
### *PES 2 - “regulatory multistakeholder-governed scheme”*

A key outcome of this policy process was the promulgation of a regulation on “environmental services management” (Perda 4/2007) by the district parliament of West Lombok. This regulation creates the foundation for the second PES scheme in the same area as a substitute to the earlier one. A sophisticated multi-stakeholder agency (IMP) was created as intermediary and controller of the operations. This public body’s board includes representatives of the civil society (WWF-NT, Konsepsi, academia, etc.) but also public agencies. The regulation established a compulsory monthly tax added to the water bills paid by consumers (households, industries, tourist infrastructures), and a volume tax paid by water producers (public water supply, mineral water companies). Tax collection started in December 2009, and the funds are used since 2010 by the IMP to cover the expenses for afforestation and local empowerment activities proposed by farmer groups.

### *PES 3 - “internalised beneficiary-governed scheme”*

In order to enhance the impacts on the provision of water services – and because it is not represented at the IMP! – the regional public water supply company (PDAM) as main service beneficiary decided to implement its own PES scheme in 2011. It translates into bilateral agreements with farmers and takes place in parallel with the activities supported by IMP (PES 2).

**Map:** Lombok island, the capital city (main beneficiaries) and location of the PES activities



While the funded activities are very similar for both, the positioning of PDAM as leader in the PES 3 provides more guarantees that critical catchment areas are prioritised for their location. This third scheme is also innovative with regards to fees collection. It relies on the internalisation of the costs to maintain water services, which are invoiced to water consumers (see figure 1). Its scope of application is wider than PES 2 with three districts instead of one.

[1] These are not the official names of the PES schemes described in this factsheet. The names are only intended to indicate the variety in the nature of the schemes.

# Contractual agreements and funding issues

## **PES 1 – “voluntary payments”**

According to a willingness to pay study undertaken in Mataram city in 2004, 95% of consumers agreed to pay between IDR 1,000-5,000 every month (USD 10-50 cents) for springs' protection. However, despite support from international donors, money collection remained very limited in practice and ambitions were thus restrained. Payments to farmer groups were designed as a development program more than as transactions for the provision of a given service.

## **PES 2 - “regulatory multistakeholder-governed scheme”**

The main reason for establishing this new scheme was to upscale money collection (and reduce transaction costs) that moves from voluntary to compulsory owing to a district regulation. A small tax of IDR 1,000 (households, USD 10 cents) or IDR 2,000 (business, USD 20 cents) is added to the monthly subscriptions of water consumers to PDAM, and the collected money is managed by the multi-stakeholder agency IMP. As the regulation is passed in the West Lombok district, only the 24,000 subscribers living there pay the tax... so that city water consumers do not contribute a penny! The regulation also set an additional IDR 10/m<sup>3</sup> tax on commercial water production by PDAM, whose payment remains uncertain.

This second PES relies on proposals drafted by local farmer groups and describing the planned activities and associated budget (information on the budget remained confidential). The proposals are submitted to the IMP and, if accepted, local groups and their members are supported with in-kind payments such as seedlings. Strikingly enough, conditions in the proposals do not address the provision of services once restoration has been performed. Farmers are free to manage their lands according to their own plans after funding is received, and this potentially includes logging the planted trees when mature. Legally, the proposals are more a requirement to receive a public subsidy, which is attributed by an administrative decision (unilateral), than a negotiated bilateral contract.

Based on a political consensus 75% of collected funds were initially earmarked for PES field activities with the remaining 25% being attributed to the district budget to cover IMP's operational costs. But recent changes led to these costs being covered also by the 75%, hence reducing the budget for field activities. This move shows lesser political will than expected in addressing the provision of water services with the PES. Despite a lack of publicly available data on money issues, we were told by IMP that IDR 100 million (USD 10,000) were spent yearly in the field, an amount expected to increase in 2013. Over the first two years, 10 agreements materialised with local actors.

## **PES 3 - “internalised beneficiary-governed scheme”**

The most recently created scheme leads to agreements that actually exhibit conditions. In particular, farmers must replace tree losses at their own costs: although payments are done before these conditions are actually verified, our interviews led to the conclusion that farmers understood that credibility was at stake. Transaction costs for the farmer groups are lower as the administrative burden was lightened: procedures are simpler and quicker for the negotiation of agreements, but also for the monitoring, reporting and verification stages. In addition payments to farmer groups are much higher for each group. Legally, the bilateral agreements are administrative contracts, a hybrid between a private transaction and a delegation of a public task. Field activities are very similar, i.e. restoration and reforestation efforts with little verification of achievements.

This latest PES was launched in 2011 and finalised 10 contractual agreements in a single year for a total of IDR 600 million (USD 60,000). The bigger scale of this scheme comes from the wider scope of the money collection process. Indeed, the water company collects IDR 1,000/month (USD 10 cents) from all of its 75,000 subscribers in order to internalise the costs of water services provision, i.e. PES activities on-the-ground.

## Policy process, economic rationale and effectiveness

### **Embedment into public policies and political stakes**

Although the first scheme was initially planned as an application of the Coasean approach to environmental management, i.e. bilateral contracts outside of the state intervention, it appeared to be rapidly controlled by district authorities. The second PES, that we label “regulatory multistakeholder-governed scheme”, perfectly reflects the embedment of a private initiative into a public policy with associated regulations making compulsory the financial contributions by water consumers. This process led to the dismantlement of the previous voluntary scheme, yet with continued involvement of two of the originators (Konsepsi and WWF-NTB). The creation of the IMP was generally welcomed by stakeholders since it potentially gave voice to most of them. Yet in practice the new architecture also provided an opportunity for politicians and administrative bodies to serve their own goals. In this regard, it is worth noting that neither PDAM nor the provincial forest agency is represented at the IMP, probably for political reasons.

The shift had positive (larger scale, interactions among stakeholders, mainstreaming of environmental issues into policy) and negative (lack of conditionality, limited environmental effectiveness, high transactions costs) implications. Although demonstrating the local political commitment towards the provision of environmental services, the district regulation (Perda 4/2007) also represented local power struggles and the temptation of embezzlement when public administrations take the lead. Furthermore, the late decision to allocate the 25% of the tax collection to the district budget instead of using it for operational costs shows how previous agreements can be denied because of local competition for power. It happens at the expense of tax payers and service providers, the available funds for sustainable land management are also reduced, and in the end the credibility of the political commitment also suffers.

### **Limited additionality of the scheme**

The effectiveness of this second scheme remains undocumented as very few activities were implemented despite substantial money collection. Moreover, a proper monitoring of the activities is still lacking (no mapping, no follow-up once the trees are planted...).

Observations in 2012 support a pessimist view on the concrete impacts on groundwater for several reasons. First, conditions associated to contracts are poor if not inexistent. Second, the district government (and its forest agency) *de facto* controls the IMP and its interests and goals were served in priority, such as the application of specific forest management (yet on small areas), the control of money spending and the capacity to maintain power over the provincial level. These goals leave little space to the provision of water services. Last, the activities are implemented without consideration of the hydrogeological reality. Although technical studies are required by another district regulation (Perda 2/2001) in order to delineate protection areas around the water catchments, they were never enforced. However the scheme adapts over time in response to local settings, and local actors can influence it. Its relevance is thus not disqualified in principle, and IMP board members have the possibility to improve its implementation in the future. For instance, NGOs or service beneficiaries might push for a better spatial targeting of field activities, for more conditions prior to payments and for enhanced monitoring of the outcomes.

### **Reaction of PDAM: de-embedment**

In reaction to these shortcomings, the PDAM as main single beneficiary of watershed services established recently its own PES. The funding comes directly from internalization in the water bills of the production costs related to the protection of springs. Interestingly, this funding is in line with national water regulations (law on water resource 7/2004, government regulations 16/2005 on water supply development and 23/2006 on water tariffs) as opposed to the district regulation imposing a tax that was eventually assessed as conflicting with the national fiscal regulation! While the first reason that comes to mind for the emergence of this parallel initiative is the low efficiency of the previous PES, data also shows that PDAM has a political agenda. Creating its own PES on Coasean (hence bilateral) grounds is a way to be seen as a generous contributor instead of a tax collector. Unstated competition was also observed between IMP and PDAM institutions: they exhibit little mutual support although both schemes should be complementary with their own strengths and limitations.

*The PES initiatives in Lombok are interesting for their evolution from short-lasting and voluntary (for payers and beneficiaries) to mandatory on the beneficiary side.*

*While there is a consensus on the need to secure funding with coercive means, the search for effectiveness and local power struggles triggered the establishment of two distinct schemes. Indeed, taxes were first set up before the water distribution company decided to internalize the costs of service provision.*

*Everything looks like the private interests of the water company as beneficiary (sustained water supplies) found their way amidst public interests for local development (PES 2). At the same time, the Lombok case illustrates perfectly the opportunities and risks to rely on regulation and a certain level of embedment into public policies: awareness raising and substantial funding, but dependence on political agendas.*

## Challenges

The main challenge for the evolving PES attempts in Lombok, that reached so far three different stages, is to ensure that impacts materialize soon with more reforestation, less forest degradation, and in the end an improved provision of water services. Indeed, the funding involved is substantial relatively to the small scale of the area of implementation, and for a developing country (respectively USD 10,000 and USD 60,000 a year for PES 2&3). Local farmers assert positive impacts on springs due to restoration and conservation activities, but positive effects on water catchments still are to be assessed. Improved targeting is required based on future hydrogeological studies, and additionality is not guaranteed so far. The willingness of PDAM to engage in bilateral contracts with deeper negotiations might help to make progress, but our observations were not conclusive yet in this regard. Contracts in all Lombok PES schemes fail to effectively address the causes of a decline in water services, and much progress can be done with conditions and monitoring.

Another challenge is political. It is certainly good that water became a prominent political issue, both for drinking water and agriculture irrigation (note that farmers do not contribute to funding when using irrigation techniques, which is a sensitive political issue and introduces a controversial “pay the polluter” element if they receive PES payments). Local NGOs can now point to the weaknesses of the schemes and propose fine-tuning or more dramatic changes, and they will have to find a balance between public debates and backstage lobbying to this aim. The board of IMP where they have a seat provides one promising way to promote their ideas. Competition between the various schemes can be healthy and lead to positive outcomes if their promoters try to justify their maintenance with real improvements, but it can also lead to a waste of financial resources if they do not coordinate more in the future. Ironically, the public status of PDAM did not obviously facilitate such coordination so far because of local power struggles.

A third challenge is legal. The tax collected in addition to water bills, as it is aimed at maintaining water services, eventually covers the costs of water production. As such, these monthly fees can be viewed as redundant (thus undue) financial contributions because water bills are supposed to also contribute to this objective. This issue was pointed out by a commission of the national Financial Supervisory Board that declared the tax illegal, while recognizing the relevance of related activities. The ministry of environment is now trying to fix this problem, but PDAM has admittedly found a solution with its internalization approach that dramatically differs from a tax (at least in legal terms and visibility for contributors). Thus the third and most recent PES relies on a stronger legal basis and faces fewer legal issues than the public intervention. Indeed, it takes advantage of a clear statement in national water regulations that water supply companies are responsible for water management, including protection of the recharging areas. Costs incurred for this protection are thus part of their operational costs from an accounting perspective.

What does this tell us? The extent and nature of the embedment of the scheme into public policies is central, and PES initiatives can certainly not be envisaged as transactions taking place in a vacuum. Rather, they constitute specific modes of governance that interact with many others and also with related institutions and legal provisions. Concretely, in the case of West Lombok, if the district regulation on water catchment protection (Perda 2/2001) were to be implemented and enforced in the first place – with associated protection of strategic locations – then the need for these various PES would be limited. The latter actually fill the gap, maybe temporarily, between laws and their enforcement. Altogether, they also demonstrate the institutional ingenuity of the local actors when they face obstacles, as illustrated by the variety of design in all three PES.

# Opportunities

An important opportunity is the legal solution used by PDAM with the third PES. While the Ministry of the environment and forest administrations keep discussing a way to spread the second PES, PDAM remains firm on its feet. It circumvents the policy bargaining and likely financial capture by intermediaries, and continues to rely on the national water regulations. These allow any regional public water supply company in Indonesia to collect money, in their operational cost structure, to support the protection and restoration of their catchment' recharging area. This solution could be used today all over Indonesia to access financial resources through the monthly water bills for the provision of environmental services, all the more as financial contributions from individuals are very low (the price of one cigarette in Lombok) and might lead to reduced bills in the longer term when environmental services are secured. This might be innovative in Indonesia, but similar requirements are applied in other countries already. Researchers are encouraged to take a closer look at the regulations addressing natural resources for specific environmental services (here water regulations) to solve the legal and administrative problem of many PES schemes.

In Lombok, it would also be possible to observe the merits of PES from the perspective of payers' acceptance. The creation of a new tax faced reluctance in a country where public financial resources are suspected to be misallocated. The establishment of the IMP, where civil society is also represented, gave better guarantees that collected funds would be spent according to the initial statements. By stipulating that 75% of the money would be spent on contracts with farmers, the regional authorities could enhance local acceptance.



## Contacts

Romain Pirard ([r\\_pirard@yahoo.fr](mailto:r_pirard@yahoo.fr))  
Institute of Sustainable Development and International Relations (IDDRI)  
Chief coordinator of INVALUABLE project on market-based instruments for ecosystem services ([invaluable.fr](http://invaluable.fr))

Guillaume de Buren  
([Guillaume.deBuren@unil.ch](mailto:Guillaume.deBuren@unil.ch))  
Idheap – Swiss Graduate School of Public Administration (University of Lausanne) - [www.idheap.ch](http://www.idheap.ch)

## Related publications

Pirard, R., 2012, *Payments for Environmental Services (PES) in the public policy landscape: "Mandatory" spices in the Indonesian recipe, Forest Policy and Economics, 18, pp. 23-29*

de Buren, G. (forthcoming), *La régulation des interdépendances entre la forêt et l'eau potable en Indonésie ; études de cas sur le site de Lombok, Working paper. Lausanne: idheap - University of Lausanne. Available on [www.idheap.ch/e/Guillaumedeburen](http://www.idheap.ch/e/Guillaumedeburen)*

## Contacts

Remuneration of Positive Externalities (RPE) / Payments for Environmental Services (PES) in the Agriculture and Food Sectors  
A project of FAO Natural Resources Management and Environment Department, 2012-2015  
Project website: <http://www.fao.org/nr/aboutnr/environmental-services/en/>



Food and Agriculture Organization  
of the United Nations  
Viale delle Terme di Caracalla  
00153 Rome, Italy  
[www.fao.org](http://www.fao.org)

Dr. Philipp Aerni  
FAO-NRD/ETH Zurich  
[Philipp.Aerni@fao.org](mailto:Philipp.Aerni@fao.org)

Bernardete Neves  
FAO-NRD  
[Bernardete.Neves@fao.org](mailto:Bernardete.Neves@fao.org)

Stéphane Jost  
FAO-NRD  
[Stephane.Jost@fao.org](mailto:Stephane.Jost@fao.org)

Project implemented with the support of



Eidgenössische Technische Hochschule Zürich  
Swiss Federal Institute of Technology Zurich  
[www.ethz.ch](http://www.ethz.ch)



Schweizerische Eidgenossenschaft  
Confédération suisse  
Confederazione Svizzera  
Confederaziun svizra  
Federal Office for Agriculture FOAG  
[www.blw.admin.ch](http://www.blw.admin.ch)