

# 7 Financing mechanisms for sustainable forest management in Indonesia: the role of public financing instruments

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## **Abstract**

*This paper presents the public financing instruments for forestry of Indonesia, especially the Re-greening Fund. The conclusion is that a gap in financing mechanisms exists. The development of a new financing institution that is autonomous and independent to address current issues in forest financing is proposed. It is also be stressed that any new initiatives in forest conservation, including the introduction of forest financing instruments, should be predicated on solving the underlying causes of failure. Therefore, a discussion of the current problems and necessary pre-conditions for achieving sustainable forest management and rehabilitation is also provided. Finally, payment for environmental services (PES) is briefly covered. The definition of “payment for environmental services”, the various types of environmental services provided, as well as the role of governments, are clarified. The paper concludes by offering some recommendations for addressing forest financing problems in Indonesia.*

## **Introduction**

Forests cover about 120 million hectares in Indonesia, or about 63% of the total land area of the Indonesian islands<sup>19</sup>. Its forest resources contribute significantly to the national income and employment, and have driven national economic development and growth in the last three decades. Forestry policies still focus primarily on supporting economic development,

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<sup>19</sup> Data from Forest Planning Board (BAPLAN) in 2003

while less consideration is given to sustainability issues. This situation seriously impacts the productive capacity of the forest, as well as its ecological and social values. About 59.2 million hectares of forestland urgently require rehabilitation, and such degraded areas are increasing annually. The Millennium Development Goal Asia Pacific Report in 2006 gave Indonesia a negative score for its lack of progress in increasing forest cover. Obviously, forest conservation remains a major problem in Indonesia<sup>20</sup>.

Illegal logging, forest fires, forest conversion, over-cutting of production forests and failures of forest rehabilitation are the causes of severe environmental degradation (e.g. frequent floods and droughts, decreasing water quality, and reduced land productivity). Studies examining forest rehabilitation issues (Kartodihardjo *et al.* 2004; Haryanto *et al.* 2003) have identified seven broad, inter-related issues as the underlying causes of failure in forest conservation in Indonesia: (1) uncertainty of forest land tenure; (2) limited rights and access to forest land and programs; (3) weakness of forest governance and management institutions; (4) constraints of unsynchronized forestry laws and rules; (5) lack of economic infrastructures for forest management; (6) ineffective financing mechanism; and (7) lack of an incentive system.

The first part of this paper discusses the problems and necessary pre-conditions for achieving sustainable forest management in Indonesia based on its current situation. The authors argue that any new initiatives in forest conservation, including the introduction of new forest financing instruments, should be started first by solving the underlying causes of failure. The second part of the paper describes the current financing mechanisms – one of the forest conservation problems – especially public financing for forestry. The last part of the paper will discuss payment for environmental services, which is receiving much attention nowadays. The definition of “payment for environmental services” and roles of governments in these PES schemes are clarified. The authors conclude by presenting a general summary and offering some recommendations for addressing forest financing problems in Indonesia.

### **The root causes of forest conservation failure**

The unambiguous demarcation of state-owned forestlands causes uncertainty of land tenure. These boundaries are perceived as definitive by the Ministry of Forestry, but involved very little community participation during the field-mapping. The involvement of stakeholders is indeed insufficient, while forest boundary mapping initiated by third parties (e.g. local people and NGOs) is rarely recognized by the authorities (Forestry Planning Board of the Ministry of Forestry in this case).

The forestry laws and regulations tend to limit local people's rights and access to forests and forestry programs. This reduces business opportunities and forestry activities, especially for the local communities. The traditions and cultures of societies living within and close to forests depend strongly on the forest and its products, while their living behaviour is adapted to the capacity of the forest to provide livelihood. The limitation of rights and access, as well as the uncertainty of land boundaries, often cause disputes both between the local people and governmental bodies. Furthermore, such social conflicts result in a disregard for forest conservation and further degradation of forest resources.

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<sup>20</sup> Kompas Daily, October 2006

Most of forest land in Indonesia is managed inappropriately. The National Park and Forest Conservation Agencies do not have sufficient manpower or the capacity to properly manage the number of National Parks and Nature Reserves. The responsible management agencies are often neglectful and regulations are applied inconsistently. For example, management of protection forests is handled by state-owned companies, private forest concessions and district governments, with overlaps and gaps in mandates. Most production forests are in similar situations. One of the reasons for the haphazard management practice is the process of decentralization that is taking place in governmental administration. Unsynchronized interpretation and implementation of forest policy can lead to forest degradation.

In the Forestry Law, all natural forests are placed under one category (i.e., natural forest). However, most forest areas are in fact degraded, and productive forests and degraded forests should be treated differently, in policy as well as technical approaches to their management. Forestry regulations also tend to exclude or constrain public involvement in forest restoration activities and funding mobilization. Furthermore, they create confusion and uncertainty in how to manage degraded forests (such as degraded nature reserves).

The last two underlying causes of forest rehabilitation and conservation failure in Indonesia are ineffective financing mechanisms and lack of incentives. These two factors, which are the main topics of this paper, will be discussed in detail in the following section.

### **Forest financing mechanisms in Indonesia: current status and issues**

#### ***Principal policy and financial issues that limit sustainable forest management in Indonesia***

Some government initiatives on forest rehabilitation have been implemented since the early 1970s. It started with the Regreening Guaranteed Fund (*Dana Jaminan Reboisasi* – DJR) in 1980. This fund has changed its name to the Re-greening Fund - *Dana Reboisasi* (Box 1) and still continues today. The Regreening Fund is managed by the national government, and the funds are allocated to the provincial and district governments as a Fund for Special Purposes – *Dana Alokasi Khusus*. Since 2003, this fund has been used to finance the national initiative on land rehabilitation called GERHAN, which aims to restore 5 million hectares of degraded land by 2009 (Directorate General of Bina RHL 2006)<sup>21</sup>.

The movement has been criticized for its ineffectiveness in addressing the land and forest degradation problems in Indonesia. The government funds for reforestation and GERHAN programs are allocated to farmers as direct incentives (in cash or seedlings) to plant trees on their farmlands. Up to date, the program has achieved little success. The ineffectiveness of these rehabilitation programs is exacerbated by the failure in the management of remaining natural forests. Pressure on natural forests is increasing due to illegal logging, forest fires, land conversion and over-cutting. The rehabilitation activities could only be maintained while financial support was available, as it provided no incentives for sustaining the activities and failed to create a sense of ownership among the local people.

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<sup>21</sup> GERHAN program classifies degraded lands into 3 categories: 1<sup>st</sup> priority land (extremely degraded) such as shrub lands and bare land; 2<sup>nd</sup> priority land (degraded) such as secondary forests; and 3<sup>rd</sup> priority land (other land uses).

On the policy and regulatory aspects, the National Forest Law Number 41/1999 Article 35 confirms the existence of funding for investment in re-greening and rehabilitation. The objective of the Investment Fund is to provide financing to ensure sustainable management of forest. The Re-greening Fund previously mentioned is regulated by Presidential Decree No. 31/1989. However, ensuring availability, proper management and use of financing under this scheme remains problematic.

The current funding allocation for forest rehabilitation is given directly to the Ministry of Forestry as a governmental budget. But there is no clear mechanism to distribute this grant to lower levels of implementing agencies, such as the provincial, district and local governments. This usually causes delays in implementing activities. At the national level, the Re-greening Fund is categorized as non-tax revenue, management of which falls under the category of general state revenues in the National Budget for Revenues and Expenses. This makes the provision of this fund to the forestry sector more difficult due to the cumbersome administrative processes. An international consultant auditing this Re-greening Fund stated that the management of the fund is inefficient and needs to be revised (Roffandi 2005).

Moreover, the current national budget distribution scheme for protected areas is based on simply dividing the overall directorate budget among the areas, as opposed to allocating budget to the protected areas based on priorities related to their biodiversity value and management requirements. A study prepared by the Indonesian State Ministry of Environment (McQuinstan *et al.* 2006) emphasized that the severe funding shortage is resulting in inadequate staff, vehicles and support for day-to-day activities on protected areas management. There is an apparent mismatch between the amount of available funding and Indonesia's commitment to developing 30 million hectares of terrestrial and marine protected areas as one of the key activities under the Convention of Biological Diversity (CBD). The study concluded by stating that protected areas in Indonesia suffer a total financial deficit of US\$81.94 million in annual operating budget.

The allocation of the rehabilitation grant is based on yearly budget reporting. It means the funds need to be spent and reported within the budget year. For the implementing agencies, this causes difficulties since the rehabilitation activities depend heavily on rainy seasons, which sometimes come at the end of the budget year. The pressure to use up the budget within the year often results in arbitrary spending of funds. In addition, getting the funds made available involves complicated and unaccountable administrative processes. Furthermore, the existing forestry laws are not appropriate to support initiatives on creating new funding sources for forest rehabilitation and conservation; some of the regulations pose barriers to those initiatives and even become driving factors of forest degradation.

### ***Institutional and policy reforms needed to capture additional finances for sustainable forest management***

To effectively manage existing funds is one of the keys to addressing the current forest financing problem in Indonesia. Learning from the experiences of Costa Rica and other developed countries, an autonomous and independent financing institution can become an alternative to a national body in managing the existing funds, mobilizing other funding from external sources, including global ones, and channelling those funds specifically to forest conservation.

### Box 1.

The Presidential Decree No. 35/1980 created the Re-greening Guaranteed Fund (Dana Jaminan Reboisasi – DJR) in an effort to rehabilitate production forests. At that time, a tax of \$4.00 and \$0.50 was charged for every cubic meter of timber harvested and wooden chips produced, respectively. The government bank held the fund under a special account of the Directorate General of Forestry, monitored by the Ministry of Agriculture. This fund is a performance bond, meaning it will be returned to the forest concessionaires once they have conducted rehabilitation on their cutting areas.

Despite the good intentions in creating the fund, it was under-utilized. Two reasons could be found. First, the profits of the logging operators were high enough to cover the cost of forest rehabilitation without the use of the fund. Second, the fund was considered by some as an alternative to not conducting any rehabilitation because of the limited duration of cutting permits. As a consequence, the fund became ineffective and inactive because of the limited use (i.e., only for rehabilitating cutting areas being charged for the fund). Some changes have since been made in the management of the DJR to make it more effective:

i) The government widened the scope of the fund to forest types other than production forests, including degraded lands in general. As a consequence, the fund changed its name to the Re-greening Fund (Dana Reboisasi – DR).

ii) In 1989, a government regulation was effected stating that the Re-greening Fund is to be used only for rehabilitating non-production forests. The fund, therefore, became a subsidy to rehabilitate forests in general. There were controversies over the failure of production forests to sustain yields into the future.

iii) In 1999, another government regulation made a drastic change to the status of the Re-greening Fund from obligatory contribution to non-tax state revenue, thereby changing its philosophical function and distribution mechanism. The fund, managed under the Ministry of Finance, had been used not for forest rehabilitation but to cover operational costs of the government and for national development. However, the new Forestry Law No. 41/1999 sought to reverse the function of the Re-greening Fund to forest rehabilitation and stated that an alternative financial management institution is needed for this purpose.

(Source: Roffandi 2006)

As mentioned previously, some supportive policies and laws do exist for the establishment of this independent institution. For example, Article 21 - Forestry Law Number 41/1999 states that a financing institution to support the development of the forestry sector is needed. At the policy level, the development of an alternative financing institution can fit under the 'Institutional Development of Forestry and Plantation Programs.' This is a part of the Strategic Plan for National Forestry Program (*Renstra Dephutbun*). It is recommended that the financing institution be autonomous, independent and credible to manage and allocate funds for forest rehabilitation and management, either from national or international sources.

Roffandi (2005) recommended that this alternative financing institution (*Lembaga Keuangan Alternatif - LKA*) should act as an executing agency in distributing the funds. In this case, the funds are managed by LKAs and not by the Ministry of Finance. It is implied that the funds

under LKA should not be limited to a one year budget cycle as in the state budget, allowing transactions to be made at any time depending on the season and investors' readiness.

The LKA can have a head office in the capital city to oversee national-level business, while LKAs at the provincial level are suggested to manage funds at local levels (the portion of reforestation fund for the province is 40%). From the regulatory perspective, the LKA should be developed as a financing institution legitimated by Governmental Regulation (Peraturan Pemerintah – PP) based on the previously mentioned Forestry Law. Furthermore, it is recommended that the status of LKA be a state-owned-company (Roffandi 2005). To support the LKA, a set of institutions should be established in the form of land and forest management units. These units at the national, provincial and district levels would formulate and review rehabilitation plans and fund disbursement rules, and monitor and evaluate activities.

Currently in Indonesia, a competitive fund allocation process has been implemented to improve the management capacity and performance of higher education institutions. The system allows the Ministry of National Education to disburse funds to state and private universities to support multi-year programs, although the operation of this grant is still regulated under the national finance laws. The Ministry or the Directorate General does not intervene, but monitors the implementation of activities based on assigned criteria. The fund recipient must provide commitment for counter budget. A similar system can be adopted in the management of forestry financing to allocate funds to its management units.

## **Thinking for the future**

### ***Improving forest financing within existing setups***

Tomich *et al.* (2004) argued that three broad problems were causing people's ignorance in environmental conservation, namely policy distortion, market imperfection, and market failures. Policy distortion or misguided policy often results from the government setting a target without consideration of the risks to local livelihoods and other environmental impacts. For example, establishing a yearly budget for the national reforestation program pushed the operators to accelerate the activities and treat it as an annual project. Most of the time, they precluded community participation. Because of the lack of project ownership by the local communities, the programs were unsustainable and the lack of maintenance resulted in wasting of financial resources.

Furthermore, market imperfections, including high transaction costs, insecure tenure and lack of access to banking services, can be constraints to forest conservation and rehabilitation (Tomich *et al.* 2004). These problems often occur in developing countries as observed by Kartodihardjo *et al.* (2004) and Haryanto *et al.* (2003).

Market failures exist where no market price exists for certain public goods, such as in the case of environmental services. It results in externalities referring to the effects of activities by one economic agent on another that are not reflected in market prices. The existence of externalities opens avenues to negotiations between actors who provide environmental services (ES providers) and beneficiaries of these services (ES beneficiaries). Economic incentives are more effective than command-and-control in guiding potential ES providers to protect and rehabilitate the environment.

The stages of the environmental issue cycle (Winsemius 1986; Tomich *et al.* 2004; van Noordwijk *et al.* 2006) describe the prominence of environmental externalities – both positive (environmental service) or negative (environmental degradation) – and the evolution of public perception over time through social interaction and scientific enquiry. Depending on the scale of people involved and how their influence and concerns are impacted, policy makers at various levels of the government can choose one of four strategies in responding to the demands of various stakeholders (Tomich *et al.* 2004; van Noordwijk *et al.* 2006). These are: (i) ignore the issues for as long as possible; (ii) make efforts to stop the root causes; (iii) mitigate degradation to meet the agreed environmental threshold; and (iv) prevent or reduce degradation by modifying the behaviour of land users.

Van Noordwijk *et al.* (2006) further offered a number of options in solving environmental problems. The options are: (i) regulate the behaviour by setting standards based on the (sometimes perceived) environmental threshold; (ii) stimulate stakeholders to seek innovative solutions within the set of standards; and (iii) provide an incentive scheme to reward stakeholders who give positive externalities or improve the environmental quality. Environmental degradation that exceeds the established threshold will usually cause damages and may even result in human casualties. The polluter-pays-principle applies in this situation. In other words, the victims need to be compensated by the party responsible for the environment degradation which caused economic or other losses. For Indonesia, the current case of hot-mud flows in East Java is a good example of how both environmental and human-welfare damages have been inflicted from environmental degradation.

Another situation is when rights-to-pollute exist and the actors (sellers) have not fully utilized this right. The buyers can make use of these rights by operating in the red zone (lower than the environmental threshold, e.g., the “cap and trade” mechanism under the Kyoto Protocol or the program for reducing water salinization in Australia). Alternatively, the actors involved may decide not to utilize them for the sake of conservation (e.g., the conservation concession concept). The conceptualization of rewards for environmental services (RES) starts with the understanding that the behaviour of one actor can improve or maintain environmental quality above the set standard. Farmers applying land conservation techniques to reduce river sedimentation and local communities restricting certain land use for conservation are such examples.

### ***Potential of PES in financing sustainable forest management***

Market-based mechanisms have the potential to provide additional revenues for financing forest management and rehabilitation. Markets for environmental services can take the form of either compensation (or rewards) for environmental services (CES or RES). A review of the current situation shows that a patchwork of regulations and initiatives in developing rewards for ES schemes have been implemented at different scales (van Noordwijk *et al.* 2006). Developing markets for environmental services as financing instruments, especially at the national level, should be started with sufficient understanding of these different scales and the concepts of CES and RES should be carefully considered.

Adapted from Norton (1988), Tomich *et al.* (2004) highlighted the distinctions of macro (global), meso (regional transboundary, national and inter-community) and micro (intra-community) scales of environmental goods and services. Table 1 presents 12 prototype situations describing the scales of environmental services. This implies that opportunities exist in developing ES markets at various scales.

At the global scale, markets for biodiversity and carbon sequestration have great potential. Markets for watershed protection mostly apply at the meso-scale, especially between communities at the watershed level. The effects of upstream land cover change on hydrology downstream can be obvious, and watershed functions in regulating water flow and providing good quality water is intuitively easy for the local people to understand. Therefore, the value of watershed conservation can be easily comprehended and marketed at this level. It can also work well at regional transboundary scale, especially for land-locked countries such as in Europe. A market for landscape beauty (and biodiversity conservation) can potentially exist at global, regional and national levels where the inherent values of nature and biodiversity are recognized, and where there is a desire to leave these natural areas for the future generations. At the micro level, the existence of cultural values for the environment and ecosystem support for livelihoods is important.

**Table 1. Environmental services at different scales**

Environmental Service Typology	Macro	Meso			Micro
	Global	Regional trans-boundary	National	Inter-community (within province, district)	Intra-community
<b><i>Watershed protection</i></b>					
1. Total water yield for hydroelectricity via storage lake	---	-	+	+++	-
2. Regular water supply for hydroelectricity via run-off-the-river	---	+	+	+++	-
3. Drinking water provision (surface or groundwater)	---	+	+	+++	+
4. Flood prevention	---	++	+	+++	+
5. Landslide prevention	---	++	+	++	+
6. General watershed rehabilitation and erosion control	---	++	++	+++	-
<b><i>Biodiversity conservation</i></b>					
7. Biodiversity buffer zones	+++	+	++	+	-



Environmental Service Typology	Macro	Meso			Micro
	Global	Regional trans-boundary	National	Inter-community (within province, district)	Intra-community
around protected area					
8. Biodiversity landscape corridor	+++	+	++	+	-
<b>Carbon sequestration</b>					
9. C restocking degraded landscapes	+++	++	+	--	---
10. C protecting soil and tree stocks	+++	++	+	--	---
11. Guaranteeing production landscapes meet environmental standards	+++	++	+	--	---
<b>Landscape beauty</b>					
12. Providing guided access to landscapes of high beauty and/or cultural and spiritual value (ecotourism)	+++	++	++	+	+

---	very poor	+++	very good
--	poor	++	good
-	marginal	+	some possibility

*Adapted from: van Noordwijk (2005)*

The roles of the government will differ at each ES level. At the global level, the national government can act as ES providers. For example, when an Annex I country such as Indonesia enters the carbon market under the Kyoto Protocol, the Indonesian government will be the one to receive carbon payment for their rehabilitation efforts as set forth in the Protocol. In Costa Rica, the National Institute for Biodiversity represents the national government in making agreements with bio-pharmaceutical industries and universities for bioprospecting in protected forests (Rojas & Aylward 2003).

## Conclusion

To achieve sustainable forest financing in Indonesia, it is essential to solve the root causes of forest conservation failures, such as uncertain forest land tenure, limited access of the local people to forest resources, insufficient capacity at all levels in managing forests and inconsistencies in forest law, regulations and management schemes. Therefore, reformulation of the rehabilitation plan, forest fund disbursement rules and monitoring and evaluation mechanism will form a good foundation for developing innovative forest financing strategies.

Despite its many constraints, the forest rehabilitation program undertaken since the early 1970s have been based on good intentions of the Indonesian government. Various funds, laws and policies have been developed to support it. The most recent and promising one is the provision in the National Forestry Law to establish a financing institution that would support the development of forestry sector. The financing institution needs to be an autonomous, independent and credible agency to manage and allocate funds to forest rehabilitation and management activities. It should be expected to simplify the complicated bureaucratic processes.

As the most recent trend in financing forest management, interest in PES has grown considerably in recent years. In many cases, PES schemes have been perceived as potential gold mines for additional national income. Careful consideration must be given when applying PES schemes at the national level. It should start by understanding the different levels of environmental services, as well as the role of governments at each level. Moreover, the income from PES should be fully invested in forest management as the providing source of environmental services. A good monitoring process is also essential. Last but not least, strong political will is still the most important key in developing a robust financing mechanism for sustainable forest management.

## References

- Kartodihardjo, H., Murtilaksono, K. & Sudadi, U.** 2004. *Institusi Pengelolaan DAS. Konsep dan Pengantar Analisis Kebijakan.*
- Haryanto, R.P., Saleh, M.B., Hendrayanto, Ichwandi, I. & Sudaryanto.** 2003. *Sistem Insentif Rehabilitasi Lahan Dalam Rangka Pengelolaan Daerah Aliran Sungai.* Fakultas Kehutanan, Institut Pertanian Bogor, Bogor.
- Roffandi, R.A.** 2005. *The development of alternative financing institution to support sustainable forest management. Draft for publication (in Indonesian).*
- Roffandi, N.A.** 2005. *Pembentukan Lembaga Keuangan Alternatif untuk Menunjang Pembangunan dan Pengelolaan Hutan Lestari.* Unpublished.
- Roffandi, N.A.** 2006. *Making the management and use of Re-greening Fund effective for land and forest rehabilitation. A paper presented at the Indonesian Congress of Forestry IV, 13-15 September 2006 (in Indonesian language).*
- Tomich, T.P., Chomitz, K., Francisco, H., Izac, A.M.N., Murdiyoso, D., Ratner, B.D., Thomas, D.E. & van Noordwijk, M.** 2004. *Policy analysis and environmental problems at different scales: asking the right questions. Agriculture, Ecosystems and Environment 104:5-18.*
- van Noordwijk, M.** 2005. *RUPES typology of environmental service worthy of reward. RUPES Working Paper.* [http://www.worldagroforestry.org/sea/Networks/RUPES/\\_download/Working%20Paper/RUPES\\_Typology.pdf](http://www.worldagroforestry.org/sea/Networks/RUPES/_download/Working%20Paper/RUPES_Typology.pdf)