



## Designing intergovernmental fiscal transfers for conservation: The case of REDD+ revenue distribution to local governments in Indonesia



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### ABSTRACT

A REDD+ scheme would involve the transfer of financial resources to forested developing countries taking part in it. This paper simulates different approaches to the design of intergovernmental fiscal transfers (IFTs), a possible means to channel a REDD+ international payment to local governments which, in several countries, have a certain degree of authority over forest management. Using Indonesia as a case study, the cost-reimbursement and the derivation approaches are tested. It is demonstrated that both approaches could be used. Using the cost-reimbursement approach, localities with more degraded forests would receive a higher compensation per unit of carbon emission reduction than districts with primary forests. Avoiding further conversion of logged-over areas is associated with higher opportunity costs when compared with preventing the conversion of primary forests. In contrast, the derivation approach sets a fixed percentage and rate to distribute REDD+ revenues and ignores the opportunity costs of REDD+ incurred by local governments. The distribution of REDD+ revenues to eligible local governments is based on an assumed market price of carbon credits from REDD+. This paper concludes by discussing the implications of the findings for designing the distribution of REDD+ revenues, both for Indonesia and more generically for other developing countries.

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### Introduction

A reducing emissions from deforestation and forest degradation scheme (REDD+) is expected to provide performance-based payments to reduce emissions from deforestation and forest degradation in developing countries (UNFCCC, 2011). Such a scheme would require developing countries to set aside additional forest areas, which may not necessarily yield additional environmental services for local residents. Additional forest conservation would compete with other land-use activities, such as commercial logging, timber and oil palm plantations. REDD+ measures would therefore lead to a substantial loss of public revenues at various government levels (Irawan et al., 2013). Local governments, such as districts and municipalities, would be more likely to be interested in REDD+ when the costs of conservation are appropriately compensated.

One of the possible means for channelling REDD+ payments to local governments is an intergovernmental fiscal transfer (IFT) scheme (Irawan and Tacconi, 2009; Ring et al., 2010). IFTs are

commonly used in decentralised countries to distribute public revenues from the national to decentralised levels of government. The main purposes of IFTs are to distribute a share of the national government's revenues to subnational governments (vertical revenue-sharing) and to correct for spatial externalities generated from the provision of public services (Bird and Smart, 2002; Shah, 2006). IFTs have been proposed as an economic instrument to address spatial externalities of biodiversity conservation provided by local governments (e.g. Ring et al., 2010; Ring, 2008a,b,c; Köllner et al., 2002; Kumar and Managi, 2009; Santos et al., 2012). IFTs help reconcile the local costs with the spill-over benefits of conservation that reach far beyond local boundaries. Brazil and Portugal, for instance, use IFTs to support biodiversity conservation by transferring a portion of the national or state governments' taxes (e.g., in Brazil, state-level value-added tax) to the local levels on the basis of conservation and ecological indicators (Grieg-Gran, 2000; May et al., 2002; Ring, 2008c; Santos et al., 2012). Several studies have also suggested transferring a portion of the national or state governments' revenues to local levels to compensate them for the management and forgone opportunity costs borne by localities with protected areas (Köllner et al., 2002; Ring, 2008b; Kumar and Managi, 2009).

Using IFTs to channel REDD+ payments to local governments requires a different approach to determine the size of transfers,

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than the common approach used in biodiversity conservation. As a REDD+ scheme would involve the transfer of financial resources from developed to participating developing countries, the purpose of IFTs would not simply be to correct the spatial externalities of conservation but also to distribute that revenue (which could exceed the opportunity costs) vertically between government levels. REDD+ revenues could therefore be distributed using a vertical revenue-sharing scheme, which is commonly used to distribute taxes and fees collected by the national government. The size of the vertical revenue-sharing is usually determined on the basis of a share of a national tax and the amount of taxes collected within certain administrative boundaries (Bird, 1999; Bahl and Wallace, 2007).

This paper examines different approaches to determine the size of IFTs for forest conservation using the distribution of REDD+ revenues to local governments in Indonesia as a case study. We examine two important aspects of the design of an IFT: (i) the grant size to be allocated to different levels of government; and (ii) the IFT size allocated for each eligible locality to pursue REDD+. The grant size, or distributable pool, is the total transfer available to be distributed to all eligible localities at a level of government; the IFT size is the amount or size of transfers allocated to each eligible locality (Bird, 1999; Bahl, 2000). This paper aims to show the implications of using different approaches to determine the grant size and the IFT size for REDD+, thus deriving important lessons for channelling REDD+ payments to local governments. The benefits that may accrue to other stakeholders from REDD+ are not the focus of this paper.

In this paper, we assume that REDD+ would be implemented using a national-based implementation approach in which the national government would receive REDD+ payments and in which there would be no direct payments from the international level to local governments (Angelsen et al., 2008). Scholars have also proposed a nested approach to the implementation of REDD+ in which sub-national projects could be allowed to receive payments directly from international buyers (e.g. Pedroni et al., 2009). Busch et al. (2011) assume that the nested approach would be adopted and estimate the incentive structure required for local governments in Indonesia to participate in REDD+. Their approach, however, ignores the existing political economy of land-use change in Indonesia, including the distribution of power between the central and local governments and the existing incentive structures influencing different stakeholders in the pursuit of forest exploitation and land-use change. The national government currently retains most of the taxes from land-use alternatives to REDD+. For instance, Irawan et al. (2013) report that in the case of logging, the producing districts derive about half as much as the central government. This situation is also common in other decentralised countries, where the higher level of government collects the largest share of public revenues and distributes part of this to local governments using IFTs (de Mello, 2000). IFTs are, therefore, still the cornerstones of subnational government financing in most developing and transition countries (Bahl, 2000).

This paper first discusses the approaches that are commonly used to determine the size of the grant and the size of IFTs to be allocated to local governments in the fiscal decentralisation literature and provides international experiences of the distribution formulae of IFTs to support biodiversity conservation. The provinces of Riau and Papua, selected for this case study, are then presented, and the approximation of their reference emissions levels (RELs) are discussed. RELs determine the business-as-usual scenario of carbon emissions that would be emitted from deforestation and forest degradation in the future without REDD+ (Meridian Institute, 2009). Different possible approaches to calculate RELs result in different amounts of emission reductions achieved by a locality, which in turn would affect the value of REDD+ incentives to be allocated to

the subnational level (Cattaneo, 2011; Busch et al., 2009), or the IFT size for eligible local governments. The methods adopted to estimate the grant size for different government levels and the IFT size for eligible district governments in Indonesia are then discussed. After presenting the results of the analysis, the paper discusses the advantages and disadvantages of the cost-reimbursement and the derivation approaches considered for the design of the IFTs. The paper concludes with the general implications of the findings for designing REDD+ payment distribution.

## Intergovernmental fiscal transfers (IFTs) for biodiversity conservation

### *Theoretical framework for distribution formula*

Two main purposes of IFTs are vertical revenue-sharing and also correcting spatial externalities generated from the provision of public services. Vertical revenue-sharing aims to address the mismatch between expenditure needs and the public revenues generated at the local level. Since the tax base of local governments tends to be narrow, and non-tax revenues such as user charges, rents, royalties, and fees are also limited, revenue-sharing is then an option to close the fiscal gap (de Mello, 2000). Spatial externalities create an inefficient outcome of public service provision, as local decision-makers often neglect the benefits accrued to outsiders beyond local boundaries in the decision-making process (Bird, 1999). Pigou (1932, cited in Oates, 1972, p. 66) proposed that to address such spatial externalities: 'the economic unit generating the spillover should receive a unit subsidy equal to the value at the margin of the spillover benefits it creates'. By providing a unit of subsidy equal to the value at the margin of the spillover benefits, local governments are expected to provide the right amount of public service (Oates, 1972).

Related to the size of the transfers are two key aspects of the design of IFTs: the size of the 'distributable pool' and the basis for distributing transfers to each eligible local government (Bird, 1999, p. 24). The three approaches to determine the size of grant/transfer pool are based on: (i) a defined percentage of the national government's revenues; (ii) an *ad hoc* approach based on a discretionary decision that may vary from year to year; and (iii) a cost reimbursement based on the costs of public service delivery at the local level, defined by the national government (Bird, 1999; Bahl, 2000; Bahl and Wallace, 2007). Decentralised countries usually use the defined (percentage) approach or the shared-tax approach to vertically distribute revenues that are collected from taxes and fees between government levels (Bird, 1999; Bahl, 2000; Bahl and Wallace, 2007). The *ad hoc* approach is similar to any other budgetary government expenditures, where the parliament or president decides on an allocation to the subnational government on a discretionary basis (Bird, 1999; Bahl, 2000; Bahl and Wallace, 2007). This approach often involves more negotiation and political consideration than subjective analysis, and both the approach taken and the amounts agreed upon, may vary from year to year (Bahl and Wallace, 2007, p. 9). Finally, the cost-reimbursement approach decides the size of a grant pool based on a proportion of specific local expenditures to be reimbursed by the central government. Central governments usually define a service for which they guarantee to cover the costs incurred by local governments in delivering the service (Bird, 1999; Bahl, 2000; Bahl and Wallace, 2007).

Approaches to the determination of the amount of IFTs to eligible local units are based on: (i) the origin of the collection of the tax (derivation approach); (ii) a formula based approach; (iii) a total or partial reimbursement of costs; and (iv) an *ad hoc* approach (Bahl, 1999, 2000). The derivation approach determines the size of transfers to local governments based on a share of a national

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