



The experience of ecological fiscal transfers

Lessons for REDD+ benefit sharing

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Land uses at gunung Salak, Jawa Barat Province, Indonesia.

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Key messages

- Intergovernmental fiscal revenue sharing mechanisms, such as ecological fiscal transfers (EFTs) provide a financial infrastructure for incentivizing REDD+ policies and actions at the sub-national level. This is important given increasing interest in jurisdictional REDD+.
- EFTs may have a possible role in bridging the gap of performance-based payments for REDD+ policies and actions at the local governance levels.
- Quality indicators can improve the effectiveness of EFTs for REDD+, particularly with respect to social and environmental co-benefits, but this may result in a trade-off with higher transaction and implementation costs.
- EFTs will require strong information sharing and transparency in terms of the qualifying environmental indicators, and the disbursement and spending of EFT funds across all governance levels to increase their efficiency and equity outcomes.

1 Introduction

A national approach to REDD+ implementation will most likely involve governmental actors at different governance levels to support and implement REDD+ activities, policies and measures targeting deforestation and forest degradation. This needs to be accounted for in REDD+ benefit-sharing mechanisms (Luttrell et al. 2013; Irawan and Tacconi 2016). In many REDD+ countries, the nation state owns or manages forests for the welfare of the people (Loft et al. 2015). The implementation of REDD+ activities, however, normally restricts the maximization of revenues from other types of land use. Sub-national governmental entities, such as states, municipalities or local communities will thus face substantial costs in implementing REDD+ policies (Santos et al. 2012; Irawan and Tacconi 2016). This generates a need to compensate decentralized governments for the spatial spillovers of carbon ecosystem services and biodiversity conservation of forests.

Thus far, however, economic instruments in natural resource management and conservation policies, such as payments for ecosystem services, have focused largely on land users and private actors (e.g. Ring 2008a). The implementation of positive incentives for REDD+ will require institutional arrangements that allow for effective operationalization of policies as well as accountability for performance and benefit distribution across multiple governance levels, including central to local governments. Often, however, insufficient attention is paid to the design of such arrangements, in particular the question of how policy is translated into practical aspects of REDD+ implementation. Recognizing this gap, this brief aims to shed some light on the role ecological fiscal transfers (EFTs) can play as a positive incentive for REDD+ benefit sharing.

The (re)distribution of public revenues within and between different levels of government and jurisdictions in nation states is a common public policy (Shah et al. 2007; Ring 2008a). These intergovernmental fiscal transfers (FTs) occur vertically from national level to states and/or from state level to local (municipality and community) levels, and horizontally between governments at the same level (horizontal equalization between states or between rich and poor municipalities). Their aim is to improve revenue adequacy, fiscal equalization and compensation for the costs of generating spillover benefits (positive externalities) to areas beyond the jurisdictional boundaries (Ring et al. 2011). Usually such intergovernmental FTs are based on the ratio of fiscal needs and fiscal capacity. Public expenditure typically occurs for the provision of public goods and services, such as infrastructure, health and education or social welfare programs. Revenue for FTs often comes from public budgets, generated through taxes (Ring et al. 2011).

As for public infrastructure, environmental protection contributes to the well-being of people within and beyond municipal and regional boundaries. Associated opportunity and implementation costs, e.g. through land-use restrictions and enforcement of the restrictions, are often borne by states and municipalities that provide these environmental public goods (Ring 2008a). EFTs follow the basic logic of FTs, and have been proposed as a positive incentive for environmental protection. Instead of providing compensation for the provision of public infrastructure and services, the idea of EFTs is to compensate public actors such as state or municipal governments for the costs of providing environmental public goods such as biodiversity and ecosystem services. To date, EFTs have been

implemented in Brazil (May et al. 2002, 2012, 2013; Ring 2008a) and Portugal (Santos et al. 2012). In other countries, such as Indonesia and Germany, variations of EFTs are being discussed (Ring 2002, 2008b; Mumbunan et al. 2012; Schröter-Schlaack et al. 2014).

The implementation of national REDD+ schemes faces a comparable situation. In many cases local governments, such as districts and municipalities, will be responsible for REDD+ activities on the ground (Santos et al. 2012; Irawan and Tacconi 2016), while the resulting provision of the environmental public goods, carbon sequestration/storage and biodiversity conservation will produce benefits beyond state or municipal boundaries. The costs of implementing and enforcing conservation measures and the loss of public revenues, such as forest production taxes or agriculture lease fees, will, however, burden governments of federal states or municipalities that include large areas of forests (Irawan et al. 2013). The majority of funding for REDD+, so far, has been from the public sector. Most funding channels are focusing on investing in REDD+ readiness; preparing countries for the implementation of REDD+ (GCP et al. 2014). However, there is still a huge gap between supply

of and demand for emissions reductions from REDD+, and it is unlikely that the funding available is sufficient to provide a strong enough economic incentive and ensure that forest countries continue to change their development pathways (GCP et al. 2014). Based on experiences with EFT implementation, this paper discusses EFTs and their potential for REDD+ benefit sharing. We conclude with lessons learned from EFTs, recognizing that they can provide a ready and functioning financial infrastructure for incentivizing REDD+ policies and actions at the sub-national level.

Basic characteristics of ecological fiscal transfers

Decisions about where measures for biodiversity conservation and the provision of ecosystem services are to be implemented in a state are often made at the level of the central government, as biodiversity and ecosystem services are generally considered national assets or public goods. Implementation and opportunity costs for providing these natural public goods are often borne by lower governmental levels – if natural

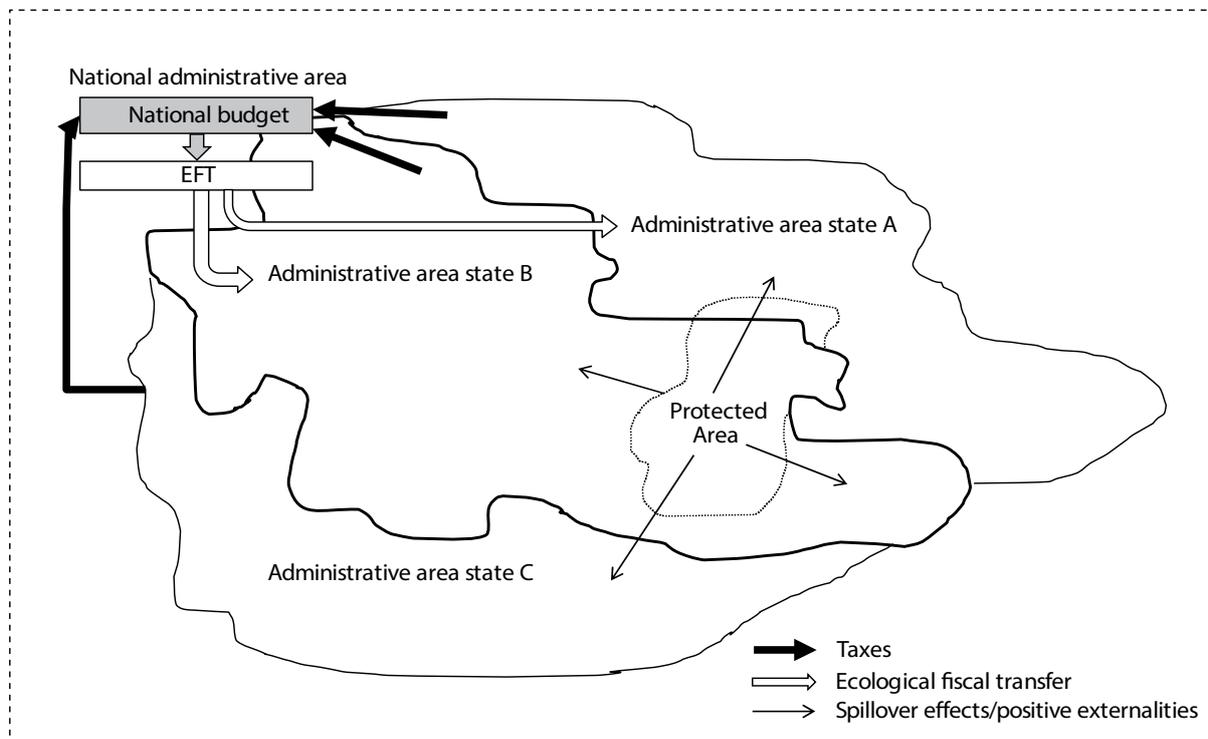


Figure 1. Underlying logic of ecological fiscal transfers

Box 1. Ecological fiscal transfers in Brazil

The Brazilian Federal Constitution (Article 155) empowers the states to impose a tax “on circulation of goods and services of interstate and inter-municipal transportation and communication (...) (ICMS)”. The ICMS is, by far, the principal source of state and local fiscal revenues, constituting 84.5% of all states’ revenues in 2010, and an even greater share of municipal revenues (IPEA Data, 2013). In Brazil, EFT revenues are generated by this tax, which corresponds to a value-added tax (Barton et al. 2011). Since its adoption in 1991 by the state of Paraná, the ecological ICMS (ICMS-E) has been increasingly legislated at the state level.

The distribution of ICMS to municipalities is regulated by the federal constitution and “twenty-five percent of the total revenues (...) accrue to the municipalities” (Article 158, IV). The same norm states that “the portions of income accruing to municipalities, will be credited according to two criteria: (i) at least three quarters, on the proportion of added value in transactions involving the circulation of goods and the provision of services carried out in their territories, and (ii) up to one quarter, according to the state’s legal provisions”. Figure 2 illustrates the breakdown of ICMS taxation, and the share that may be apportioned toward ICMS-E. The ICMS-E thus acts as a revenue neutral tool – insofar as its apportionment does not affect total funds available – to promote conservation of biodiversity while compensating a municipality for the PA that exists in its territory.

Recent analysis has demonstrated statistically that the introduction of ICMS-E increased the share of PAs; there is a positive significant correlation of ICMS-E with PAs (Droste et al. 2015). In some cases, environmental criteria reflected in the ICMS-E include, in addition to PAs, other factors such as primary sanitation investment and water resource protection.

To date, the ICMS-E has been adopted by laws in 16 out of 26 Brazilian states and most of them include a conservation factor in the allocation formula, ranging from 2 to 20% of the share (25%) of ICMS revenues constitutionally devolved to municipalities. Although the instrument was initially adopted in the south and southeast of Brazil, it is by no means restricted to the more economically well-off regions; several of the poorer states in the Amazon have also adopted it. In many cases, the value of the transfer of the ecological ICMS represents a significant amount of the municipal budget, ranging from 28% to 82% of total funds received (Campos 2000). The gross value of resources reallocated to municipalities benefiting from the EFTs by state attained a value of BRL 446 million in 2009 (USD 238 million at that time) in 11 states for which data was available, most of which (BRL 406 million \approx USD 215 million) was due to the PA criteria.

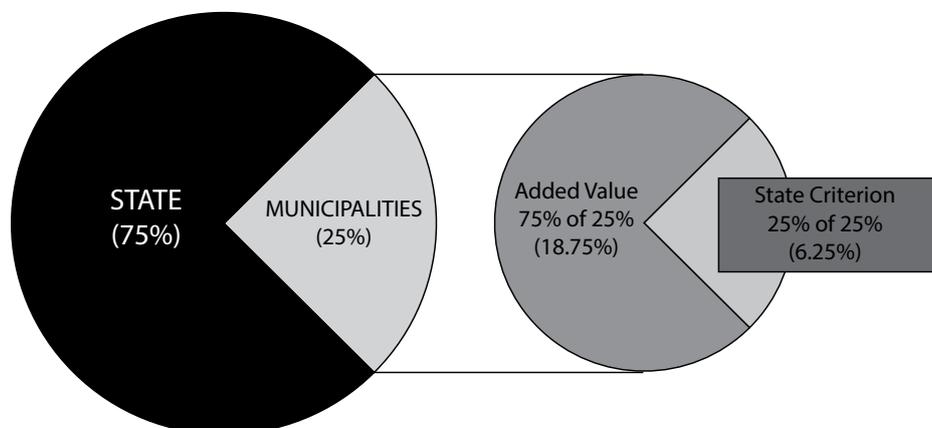


Figure 2. Source of fiscal revenues for ICMS-E (May et al. 2012)

resources do not cut across borders. To provide lower-tier governments with the revenue needed, EFTs redistribute public funds from central to decentralized governments (Schröter-Schlaack et al. 2014). Through cost compensation, the aim of EFTs is to set an incentive for local-level governments to implement conservation activities to provide natural capital for overall societal well-being (Ring 2008a).

To date, the majority of intergovernmental FTs are based on lump sum payments that allow the receiving government to use the transfers in any way it wishes, thereby guaranteeing self-determination. These lump sum payments are mostly based on non-environmental indicators, such as population and area, as the majority of

public goods and services are provided for the inhabitants of the relevant jurisdiction (Ring et al. 2011). EFTs include additional indicators such as total protected area coverage or environmental quality. To further differentiate the levels of FTs some Brazilian states include quality indicators in addition to protected area coverage, for example, the type of protected area (PA) and the land uses allowed in these areas (Grieg-Gran 2000; May et al. 2002; Ring 2008a). The federal states Paraná and Minas Gerais have introduced additional qualitative indicators, such as the quality of planning, implementation and maintenance of the PA. Such a differentiation leads to higher payments for national parks, reserves and areas protected for conducting research, as compared to PAs that allow sustainable use of natural resources.

Box 2. Proposals for EFTs as a REDD+ benefit-sharing vehicle in Indonesia

Over recent decades, Indonesia has undergone a process of significant political, administrative and fiscal decentralization. The powers for managing natural resources and environment were initially devolved to the district level¹ with significant shares of state revenues (including natural resource revenues) allocated to districts through intergovernmental FTs, with the objective of increasing local accountability, efficiency and effectiveness in natural resource management (Ardiansyah and Jotzo 2013). The bulk of district budgets (80–90%) are financed through the central government's Balancing Fund. This includes a General Allocation Fund, to deal with vertical and horizontal fiscal imbalances and to equalize fiscal capacities for public services across regions, a Special Allocation Fund, for specific programs under line ministries, and a Revenue Sharing Fund, which is derived from natural resource revenues (Mumbunan et al. 2012; Ardiansyah and Jotzo 2013).

However, in reality, there is very little accountability as deforestation has continued apace in the decentralization era, with local governments seeking to maximize their revenues from natural resource exploitation and allocations of the different FTs (Barr et al. 2006; Karyaatmadja 2006).

Policy interest in the use of EFTs to compensate local governments for foregone revenues from natural resource exploitation and/or costs incurred from conservation has increased with the political backing by former President Susilo Bambang Yudhoyono for cutting emissions by 26% by 2020, as compared to business-as-usual levels (Secretary of Cabinet of the Republic of Indonesia 2011). REDD+ features strongly in the overall strategy for emissions reduction. In its Green Paper on Climate Policy, the Ministry of Finance (2009, 65) argues that the best way forward for Indonesia's REDD+ program is to adopt a national-level policy of frameworks and targets (supplemented by selected regional - or project-level approaches, where applicable), with implementation of policy measures at the sub-national level.

Several studies have looked at the potential of implementing EFTs for forest conservation and REDD+ in Indonesia (Mumbunan et al. 2012; Ardiansyah and Jotzo 2013; Irawan et al. 2013; Irawan and Tacconi 2016),

¹ Much of the power over forests and natural resources has been recentralized to the provincial level since the passage of Law 23 in 2014 (Ardiansyah et al. 2015).

most notably from the technical aspects of setting indicators, budget allocation sizes and distribution formulae. These studies identified several challenges:

1. The ability of local governments to absorb the potentially significant increases in financial transfers from REDD+ or climate funds is questioned, as some local governments in Indonesia have accumulated substantial unspent balances due to their low capacity for public service delivery (Alisjahbana 2005).
2. Given that REDD+ will be a performance-based incentive, as recently re-emphasized in the Paris Agreement², local governments need to be able to assess emissions outcomes together with other social and economic outcomes. The local governments' knowledge on emissions data will enable transparency in the allocation and distribution of finances, and the ability to differentiate between general FTs and EFTs is critical to inform their choice of behavior based on two incentive systems.
3. The effectiveness of EFTs in generating emissions reduction outcomes will ultimately depend on the broader political economy of land-use change. The allocation of one of the existing fiscal transfer vehicles in Indonesia (the Revenue Sharing Fund) is based on natural resource revenues generated at the local level³ thus rewarding forest use and conversion behavior, as demonstrated by the high correlation between revenue levels and deforestation rates on the major Indonesian islands over 2000–2012 (Nurfatriani et al. 2015). Shared revenues accounted for about 13.8% of local district budgets in 2012 on average (Irawan and Tacconi 2016), though there can be significant variation between districts depending on the level of resource extraction. How an (REDD+) EFT rewarding forest conservation can compete with this existing set of incentives to change the behavior of local public actors depends not only on the relative size of the incentives, but also, perhaps more crucially, on the socioeconomic and bureaucratic expectations that forest use and conversion will generate employment and development. The local values for forests tend to vary widely across different districts and provinces, and local government perspectives often differ from national objectives and priorities (Irawan and Tacconi 2016).

2 <https://unfccc.int/resource/docs/2015/cop21/eng/l09r01.pdf>

3 Under the Revenue Sharing Fund, forest producing districts receive allocations of 64% of forest license fees, 32% of forest rent and 40% of the reforestation levy collected from logging operations in natural forests (Irawan and Tacconi 2016; Nurfatriani et al. 2015).

2 Assessment of EFTs

To date, EFTs have been implemented in Brazil (Grieg-Gran 2000; May et al. 2002, 2012, 2013) and recently in Portugal (Santos et al. 2012). The following assessment, therefore, largely draws on experiences in those countries (Ring et al. 2011).

2.1 Ecological effectiveness

Since EFTs serve the purpose of compensating costs for implementing environmental protection and creating positive spillovers, generally no additional requirements are made on how these measures are implemented. Therefore, the current literature on EFTs seldom explicitly discusses a direct causal link between payments and improvements in environmental quality (Barton et al. 2011). Yet, an indication of the effectiveness of EFTs can be obtained by comparing the total area and quality of PAs within a jurisdiction prior to the introduction of EFTs and years after the EFTs have been implemented. However, it has been noted that other factors must be taken into account in a given context that might lead to an increase in total PA. Therefore, a comparison with a business-as-usual scenario that includes information on historical trends in PA designation should be applied when assessing the effectiveness of a particular EFT program (Ring et al. 2011).

Referring to the case of ICMS-E, Ring (2008a, 491) states it “has become an important stimulus for the creation of new conservation units and for improved environmental management and quality of these areas”. Santos et al. (2012) show that EFT contributions in Portugal can be significant to municipalities with large parts of their area granted protection status. They state that, as a result, this may act as an incentive to keep or increase PA coverage. In Brazil, the ICMS-E was initially introduced as a mechanism for compensating land-use restrictions. Over the years, it started to be seen

as an incentive mechanism for the establishment of new PAs (Loureiro 1997; May et al. 2002). Figures from the state of Paraná indicate that the total PA within the state has increased by 164.5% since the establishment of ICMS-E in 1991. The majority of the increased protection occurred within the first 10 years of the program, indicating a saturation effect and an increasing scarcity of areas with low opportunity costs in which new PAs can easily be established (Loureiro 2002; Ring et al. 2011). Other studies, however, show that the effectiveness of the ICMS-E in stimulating the creation of new PAs in Brazil is not straightforward. As an initial attempt to evaluate this, May et al. (2012) found that, in the majority of the states analyzed (10 out of 13), the average number of new PAs had declined in absolute terms in the period after the creation of the ICMS-E.

Droste et al. (2015) recently found a direct relationship between the increase in PAs and the implementation of the ICMS-E. The authors state that, between 1991 and 2009, there was a significant positive correlation between ICMS-E and PA, meaning that there were, on average, higher shares of PAs with ICMS-E than without. They also found that gross domestic product (GDP) per capita correlates positively and significantly with PA: on average, richer states have higher PA shares (Droste et al. 2015).

Besides difficulties in proving a direct causal link between the provision of EFT payments and an increase in PA coverage, a major constraint in targeting and assessing the environmental effectiveness of EFTs is the lack of indicators for measuring environmental quality improvements within the PAs. For Portugal, Santos et al. (2012) explicitly state that quantitative indicators on PA coverage are complemented with quality criteria. Similarly, the distribution of ICMS-E revenues in most states in Brazil is currently based only

on quantitative indicators, such as the area of the PA. These take into account the relationships of size in hectares and the conservation factor of PAs contained in the municipality with the overall area of the municipality. A qualitative index which would stimulate efforts to improve local biodiversity protection and management, although included in some legislations, has yet to be regulated and implemented with success. In the case of the state of Paraná, for example, the initial implementation of the scheme was changed to adopt a quality index, which is sensitive to the efforts of municipalities toward PA establishment and maintenance. The index includes biological, physical and chemical indicators of PAs, as well as social and administrative indicators such as management, infrastructure and provision of basic needs to local communities, among others. According to Loureiro (2002), this is why the instrument acts as an incentive, rather than just compensation, and allows each municipality to influence outcomes according to their own conservation decisions and actions. Finally, the addition of qualitative criteria seems not to increase costs, once it is combined with an increase in the number of resources transferred, as established in the state of Paraná legislation. The implementation of actions that aim to increase qualitative indicators of PAs also includes voluntary help from local communities to develop diverse types of actions ranging from management to education (Nascimento et al. 2011).

2.2 Conditionality of payments

The bulk of intergovernmental FTs is allocated as unconditional lump sum payments. This provides freedom for the recipient administration to decide upon use, and thus preserves local autonomy – this is also a constitutional precondition of EFTs in Portugal (Santos et al. 2012). However, in their analysis of the ICMS-E, May et al. (2012) regard not earmarking revenues as problematic. The authors see that an important limitation of ICMS-E to environmental management is that the transfer to municipalities is not subject to strict application of resources to environmental matters, since the National Taxation Code provides that taxes not be bound to specific expenditures. According to the authors, it seems logical to assert that, in the absence of social control over the application of these resources, the likelihood of

them being used to cover other expenses at the municipal level is high. Thus, some municipalities in Brazil are already considering the inclusion of results-based payments for ICMS-E revenues. The State Environmental Agency of Mato Grosso, for example, has proposed the adoption of a scoring system to evaluate the quality of conservation. Municipalities with a positive score would then receive a revenue increment (Mato Grosso 2009). This would have the potential to form a virtuous circle: the money received would be partly applied to PAs and indigenous lands or the zones surrounding them, and this would thereby generate improvements in the quality of these areas, thus increasing the possibility of raising even greater financial resources for the municipality.

According to Nascimento et al. (2011) the experience of the state of Paraná in Brazil has shown that ICMS-E contributes to the higher goals of ecosystem services provision, biodiversity conservation and climate mitigation. The creation of qualitative indicators played a key role in enhancing these objectives without further costs, as local communities have been fully involved in this process and the municipalities have increased their revenues by reaching the different indicators.

2.3 Cost effectiveness

Besides environmental effectiveness, cost effectiveness is a key requirement for conservation measures. In general, a policy option is more cost effective relative to another either if an equal conservation outcome is attained at lower total costs or if its conservation outcome is higher for given total costs (Wätzold et al. 2010).

The policy and management costs for establishing and implementing EFTs are considered to be relatively low, because in many cases the administrative structures needed are already in place and political buy-in may be easier as this leverages existing policy instruments. The transaction costs for determining EFT payments depend on the indicators and monitoring procedures selected in each specific case. If, as stated above for Portugal and most Brazilian states, EFT payments are based only on the quantity of the area under protection, these numbers are relatively easy to obtain and costs are low (Ring 2008a). However, if additional quality indicators

are applied, monitoring costs may rise. Referring to the case of the European Natura 2000 network, Barton et al. (2011) argue that the effectiveness of EFTs is far greater if quality indicators, such as type of PA and protection status are used. However, this requires regular field validation of PA management quality. In most industrialized countries, such indicators are already being surveyed, with high-resolution monitoring procedures and corresponding capacity in place. In the context of forest-rich developing countries, however, costs of establishing quality-based monitoring systems and the lack of capacity in responsible state agencies may pose a real challenge (Loft et al. 2014). Therefore, a compromise between easily available monitoring data and capacity, on the one hand, and indicators that include quality aspects, on the other, must be assessed at the place of implementation.

Further, environmental protection can have high opportunity costs depending on geographic and socioeconomic factors (Börner et al. 2015). May et al. (2013) analyzed ICMS-E allocations in the northwest of Mato Grosso and compared the ICMS-E revenues from PA creation relative to opportunity cost of conversion to pastures. They described the specific contribution of the livestock industry to municipal value added in the area, compared with ICMS-E revenues derived from PAs and indigenous lands. They found that the absolute values of municipal revenues derived from the PA criterion are significantly higher than that from livestock and logging in the municipalities analyzed. Therefore, under certain conditions, PAs can constitute a greater source of municipal ICMS revenue than livestock and logging, despite the predominance of these activities in the gross income of this frontier region. However, it is also probable that there are other sources of spillover municipal revenues derived from service and manufacturing enterprises associated with livestock and timber activity.

2.4 Equity

When discussing distributional equity implications of EFTs, it is important to highlight, that the instrument does not provide 'fresh money' but rather, redistributes existing public funds among different public actors. Thus, EFTs are subsidiary instruments in intergovernmental fiscal relations

and their distributional effects depend very much on how the EFT's budget is generated, i.e. the general tax structure as the primary source of the revenues that are being redistributed. In Latin America, for example, the income generated through value-added tax forms a major part of the public budget. Since the VAT is imposed on traded goods they have a substantial impact on the poor (Barton et al. 2011). However, as EFTs are financed through a fixed percentage of ICMS revenues, they can have significant distributional impacts among different sub-national actors. Santos et al. (2012) show that the introduction of ecological indicators in the fiscal transfer scheme in Portugal has greatly affected the distribution among municipalities. If the new fiscal transfer regulation were to be applied without recognizing the ecological indicator based on PA coverage, Santos et al. (2012) conclude that all municipalities with more than 70% of their territory under PA regimes would lose out. In Castro Verde municipality, in 2008, for example, the ecological indicator accounts for 38% of FTs allocated and 34% of overall revenues, while in the municipalities of Lisbon, Alerim and Aguiar da Beira the ecological component is zero.

Although EFTs are payments between jurisdictions, they have indirect distributional effects on individual land users. EFTs serve the purpose of compensating municipalities (or provinces) for expenses made to supply public ecosystem goods and services, which ideally leads to more effective management and conservation of ecosystems. However, the other side of the coin is that more effective management and conservation may impact local land users in neighboring areas through land-use restrictions, even if their impact is low (Ring et al. 2011).

In some municipalities in Brazil, ICMS-E payments may be further distributed to non-municipal stakeholders within municipal boundaries. May et al. (2013) find that one of the municipalities in northwest Mato Grosso, despite not having an explicit criterion for distributing ICMS-E resources for socioenvironmental purposes, transferred USD 34,000 (around 2.6% of its total ICMS revenues of USD 1.3 million), in 2012, to two indigenous tribes whose lands lie partially in the municipality (Mato Grosso 2012). The funds were administered by the Indigenous National Foundation with active participation of

indigenous tribes with the aim of guaranteeing procedural equity. As a consequence, resources were invested in different projects (health, land use, etc.) that benefited Indian communities in the indigenous lands of the Enawenê-Nawê and Cinta Larga tribes, located within the municipality. According to respondents from the Enawenê-Nawê tribe who participated in the analysis, the ICMS-E resources transferred to the indigenous people is usually used to support ethnic customs and in monitoring the indigenous land, which involves traveling throughout the territory to prevent intrusion and resource extraction by non-indigenous persons. In the case of the Cinta Larga, the funds are used for activities that increase productivity in nut collection and poultry farming, which also result in monitoring for illegal activities inside the indigenous lands (May et al. 2013).

With regards to procedural equity, the provision of EFTs for the establishment of PAs and environmental quality objectives has the potential to raise acceptance of environmental protection measures at the local level of implementation (Ring et al. 2011; Santos et al. 2012). This presupposes good communication of the relationship between the conservation indicators and the FTs received based on these new indicators (Ring et al. 2011). Based on the experience in Portugal, Santos et al. (2012) highlight the need for accompanying EFT implementation with good information and communication strategies, as otherwise local-level policy makers may not know how much their budgets benefit from this source of funding. Similarly, May et al (2013) show that in northwest Mato Grosso, most of the people managing ICMS-E resources inside the environmental secretariats of the municipalities studied do not know the exact amount that ICMS-E generates

and how these benefits are distributed, since they are included in the general public budgetary allocations to the municipality. They find that the state government has made little effort to disseminate information on the share of funding that is distributed through ICMS-E, but relies on civil society organizations to promote its effectiveness. According to the environment secretary of one of the municipalities analyzed by May et al. (2013), “the ICMS-E was not a demand of the local population, it was a top-down initiative”. This explains, to some extent, why municipal environment officers in Mato Grosso are unaware of the amounts that are transferred to the municipalities. Further, May et al. (2012) show that there is little transparency in the implementation of municipal budgets, although municipalities are legally obliged to report on the receipt and detailed expenditures of these funds (Ordinance 2759-01). Transparency is, however, crucial to identify EFT benefits for environmental management. The lack of transparency also results in difficulties in assessing distributional issues associated with the mechanism, such as social impacts.

Finally, in terms of impact on the poor, qualitative evidence from the states of Paraná and Mato Grosso in Brazil, shows that ICMS-E has a positive impact. For example, it increases access to basic needs such as education, subsistence, health and infrastructure (Nascimento et al. 2011; May et al. 2013). This impact, however, was due to political will, but also to the fact that ICMS-E resources were not earmarked for environmental conservation. This suggests that lump sum transfers can both affect the performance of environmental results and increase distributional equity.

3 Conclusion

From the above analysis, we can draw important lessons for a national REDD+ benefit-sharing scheme that reflects the unequal distribution of forest areas within a country and the costs related to the implementation of REDD+ policies and measures:

1. Targeting sub-national public actors, EFTs can be an important element of policy mix for REDD+ benefit sharing. They complement direct regulation and incentives provided for (private) land users.
2. EFTs may have a possible role bridging the gap in revenues for REDD+ readiness and enabling actions related to local governance.
3. Intergovernmental fiscal revenue sharing mechanisms, such as EFTs, provide a ready functioning financial infrastructure for incentivizing REDD+ policies and actions at the sub-national level. This is important given the increasing focus and interest on jurisdictional REDD+.
4. Some form of intergovernmental FTs exists in many countries, EFTs could be built on existing public administration and fiscal instruments reducing additional transaction costs of their establishment.
5. Due to their potential equalization character, EFTs are especially suitable for countries with uneven distribution of forest areas. Highly forested areas would receive payments for the provision of carbon ecosystem services and biodiversity.
6. Early impact evaluations find that EFTs based on PA indicators have a positive impact on (increasing) the size of protected areas.
7. Within EFTs, the introduction of quality indicators may raise environmental effectiveness. However, monitoring of quality indicators can be costly. As with other policy instruments, such as payments for ecosystem services, there may be trade-offs between the transaction costs of monitoring 'good quality' indicators.
8. Overall, current experiences with EFTs highlight a need for transparency in the distribution of revenues to further raise awareness of the benefits of ecological public goods.

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In many countries, the state owns or manages forests in the national interests of economic development, ecosystem service provision or biodiversity conservation. A national approach to reducing deforestation and forest degradation and the enhancement of forest carbon stocks (REDD+) will thus most likely involve governmental entities at different governance levels from central to local. Sub-national governments that implement REDD+ activities will generate carbon ecosystem services and potentially other co-benefits, such as biodiversity conservation, and in the process incur implementation and opportunity costs for these actions. This occasional paper analyses the literature on ecological fiscal transfers (EFTs), with a focus on experiences in Brazil and Portugal, to draw lessons for how policy instruments for intergovernmental transfers can be designed in a national REDD+ benefit-sharing system. EFTs can be an effective policy instrument for improving revenue adequacy and fiscal equalization across a country. They facilitate financial allocations based on a sub-national government's environmental performance, and could also partly compensate the costs of REDD+ implementation. We find that intergovernmental EFTs targeting sub-national public actors can be an important element of policy mix for REDD+ benefit sharing, particularly in a decentralized governance system, as decisions on forest and land use are being made at sub-national levels. Given the increasing focus and interest on jurisdictional REDD+, EFTs may have a role in filling the shortfall of revenues for REDD+ readiness and for implementing enabling actions related to forest governance. If EFTs are to have efficient and equitable outcomes, however, they will require strong information-sharing and transparency systems on environmental indicators and performance, and the disbursement and spending of EFT funds across all levels.



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