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Decentralization, forests and livelihoods: Theory and narrative

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Abstract

This paper discusses the theory of decentralized forest management, the associated narrative and the underlying hypotheses. That discussion informs the assessment of whether decentralization can lead to forest conservation. The paper argues that the ideal model of democratic decentralization described in the literature is unlikely to be implemented given the governance constraints present in many tropical forest countries. Even if that model could be implemented, it is shown that decentralization cannot be expected to necessarily lead to forest conservation. The policies required to complement the current decentralization model are discussed, including financial incentives and monitoring and evaluation mechanisms.

Keywords: Democratic decentralization; Forest policy; Tropical forests; Poverty; Livelihoods

1. Introduction

Many developing countries in Africa, Asia and Latin America have introduced some form of decentralized forest management (Larson, 2005). An overview paper of a special journal issue on decentralized forest management notes that 'under the right circumstances, the theory can hold true: democratic decentralization can improve efficiency, equity, democracy and resource management' (Larson and Ribot, 2004. p. 12).[1] The objective of this paper is to discuss current understanding of the theory of decentralized forest management and the associated narrative, and to assess the circumstances that may lead to positive outcomes, particularly in relation to forest management.

This objective is justified on two counts. First, the theory of decentralized forest management is underdeveloped, there are contradictions in the narrative on decentralization and some hypotheses appear to be problematic. I argue that the study and the design of decentralized forest management can benefit from further development of the theory in order to clearly outline the potential causal relationships among the many variables involved. The discussion of the theory of decentralization presented in this paper is relevant to natural resource sectors other than forestry, given that decentralization is occurring for example in agriculture (Sumberg and Okali, 2006), water management (Basu and Main, 2001), fisheries and coastal management (Satria and Matsuda, 2004; Dirhamsyah, 2006), and conservation activities (Brooks et al., 2006). The need to clarify the theory and the possible outcomes of decentralization is also exemplified by the fact that there seems to be significant expectations that decentralization leads to sustainable forest management, a point noted by Oyono (2004) and McCarthy (2004). Similar expectations have also been expressed in other sectors. For example, Satria and Matsuda (2004) support decentralized fisheries management because, they assert, community-based fisheries management will lead to sustainable management.[2]

Second, the debate over decentralized forest management has focused particularly on the relationship between decentralization and forest management (Kaimowitz et al., 1998; Casson, 2001; Larson, 2002; Andersson, 2003; Gibson and Lehoucq, 2003; Pierce Colfer and Capistrano, 2005). The relationships among decentralization, forest

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[1] Agrawal and Ribot (1999) advance a similar argument.

[2] In making this claim, they refer to one of the key references on decentralization, that is Ribot (2002b).

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management and livelihoods have not been fully addressed. These relationships require attention for the following reasons: (i) studies that do not include the bidirectional influences between livelihoods, forest management and decentralization are bound to depict a partial if not erroneous picture; (ii) the increased attention devoted by national governments and donor agencies to poverty reduction results in increased information needs concerning the relationships among decentralization, forest management and livelihoods; and (iii) there is no evidence of a predictable link between decentralization and pro-poor policies and poverty alleviation outcomes (Johnson, 2001), decentralization does not seem to have benefited forests and people (Kaimowitz et al., 1998), nevertheless decentralized forest management is seen as a trend that could enhance the contribution of forests to poverty reduction (Sunderlin et al., 2005). The paper principally considers the implications of decentralization and livelihood strategies for forest management. Due to space limitations, it cannot extensively cover the potential or practical implications of decentralization and forest management for poverty alleviation.

The paper proceeds as follows. Section 2 summarizes and extends the theory of decentralized forest management and highlights the narrative related to its proposed adoption. Section 3 discusses three hypotheses at the core of the theory and associated narrative. The section contributes to an improved understanding of whether key hypotheses may hold and the implications for the outcomes of decentralization. Section 4 assesses the potential impacts of decentralization with particular focus on forest cover. The final section presents the conclusions.

2. The theory of decentralization

Decentralization is said to involve the transfer of powers from the central government to lower level actors and institutions (Agrawal and Ribot, 1999). Those authors note that deconcentration (or administrative decentralizations) occurs when appointees of the central government receive powers previously held by central agencies, whereas political decentralization has been defined to involve the transfer of powers to institutions that are accountable to citizens in their jurisdiction through electoral processes. They note that the electoral process could be designed in a way to make local level officials accountable upwards. Agrawal and Ribot (1999) argue that the latter case should be considered to involve deconcentration rather than political decentralization. They argue that political decentralization occurs only when local level officials are downwardly accountable. Political decentralization has also been referred to as democratic decentralization (Blair, 2000; Ribot, 2002b).

First, we should note that the concept of decentralization has been interchangeably used in the literature to refer to the transfer of control over resources from the state to local communities (e.g. Ribot, 2002b; Agrawal and Gupta, 2005), and from the central government to local governments (e.g. Kaimowitz et al., 1998; Casson, 2001; Larson, 2002; Andersson, 2003; Gibson and Lehoucq, 2003). This use of the term results in lack of clarity in the debate over decentralization. Hereafter, I use decentralized forest management to refer to the transfer of authority and management functions related to resources from central to local governments. Community-based natural resource management (CBNRM) refers to community control and management of resources.

Let us now consider the theory of decentralized forest management. In presenting it I rely on Larson (2003) who probably provides the most comprehensive summary available. The author groups the factors that influence the 'social and environmental outcomes' of decentralized forest management into three spheres: (i) the legal structure, (ii) mediating factors and (iii) the local government decision-making sphere.

The following elements constitute the legal structure according to Larson (2003). *Accountability*: this is the key factor also highlighted by other scholars (e.g. Crook and Manor, 1998; Agrawal and Ribot, 1999). *Balance of and limits to powers*: local authorities need to have discretionary decision-making powers over resources (following the definition of democratic decentralization), but these powers need to be balanced between local and central institutions. *Security of powers* (Ribot, 2002b): powers need to be transferred as rights rather than privileges controlled by a central government institution, otherwise the accountability relations will be focused upward instead of downward. 'Minimum environmental standards' is a further element to be added to those listed by Larson (2003). It is needed because resource users are likely to exploit natural resources rather than conserve them, particularly when the costs of resource use are borne by others (Ribot, 2002b).

There are two mediating factors between the legal structure and the local decision-making sphere: the role of the central government and economic incentives. *Central government*: it needs to be committed to implementing decentralization, provide training, and defend the rights of marginalized social actors. An element to be added to the framework provided by Larson (2003), is that the central government needs to set in place a system of sanctions to promote local governments compliance with decentralization rules (Rowland, 2001). *Economic incentives*: they include national level market incentives (e.g. promote conversion to agriculture or support sustainable forestry), and the incentives provided by the forestry regulatory framework (e.g. promotion of plantations over community forestry).

The local government decision-making sphere includes the following four factors. *Local incentive structure*: it includes 'the financial needs of local government, local economic development options (which include factors such as capital in standing forest, ecotourism potential, proximity to markets and environmental service payments) and project aid for conservation, reforestation or sustainable

forestry' (Larson, 2003. p. 222). *Local power* relations: they depend on the accountability structure but also on the capacity of the different local actors to manipulate the accountability arrangements. *Capacity*: refers to the ability of the local government to carry out its mandate. *Environmental and social ideology*: the local ethics, e.g. conservation vs. exploitation, influences local government decisions.

The analysis that follows considers additional elements that are relevant to the theoretical framework outlined above (Fig. 1). Peoples' decisions can influence local government policies and, directly and indirectly, forest management. A livelihood component needs therefore to be explicitly included in the theory. The relationship between livelihoods and forests may involve forest conversion, use of forests, and benefits from forest environmental services. Within the legal framework and other governance factors, the resource tenure arrangements should be clearly specified. This is an element which is not clearly considered in the existing theory but it is addressed in part in the narrative on decentralization, as discussed below. Corruption and patronage also have to be included because they can be expected to affect resource management (Ascher, 1999; Smith et al., 2007). Economic growth and provision of services may arise from decentralization processes with possible impacts on forests.

After considering the theory of decentralized forest management we need to understand the narrative supporting its adoption. The main outcome-based argument relates to the potential benefits of democratic decentralization noted in the introduction. It is expected to lead, under the right conditions, to improved efficiency, equity, democracy and resource management (Larson and Ribot, 2004). The potential outcomes of decentralization particularly in relation to forest management are addressed in the following sections.

A process-based argument, noted by Ribot (2002a), relies on the subsidiarity principle: 'powers or tasks should rest with the lower-level subunits…unless allocating them to a higher-level central unit would ensure higher comparative efficiency or effectiveness in achieving them' (Føllesdal, 1998. p. 190). This principle is related to the efficiency outcome noted above: decentralization of powers and tasks is expected to increase efficiency by contributing to the internalization of costs and the reduction of transaction costs (Agrawal and Ribot, 1999). The lack of effectiveness of central governments in controlling legal and illegal logging is noted by Larson (2003). However, a similar argument, could be made of district governments (e.g. Casson and Obidzinski, 2002). I am not aware of any detailed decentralization study that has assessed the comparative efficiency of different government levels in managing forests.

A second process-based motivation is that decentralized forest management can provide the basis for scaling up CBNRM which is regarded to have the potential to improve livelihoods while resulting in positive ecological outcomes (Ribot, 2002b; Larson, 2003). This motivation is particularly important because the theory summarized above does not specify what form local government management of forests should take. This motivation appears to imply that local governments should in turn devolve control over resources to CBNRM initiatives. Other reasons explaining why decentralization could improve natural resource management, which have been noted by researchers and policy makers and summarized by Larson (2003), are related to the implementation of CBNRM. They include local people capacity to identify and prioritize their environmental problems more accurately, local groups respect for local resource use rules, and easier monitoring of resource use which could result in marginalized groups influencing local policy to a greater

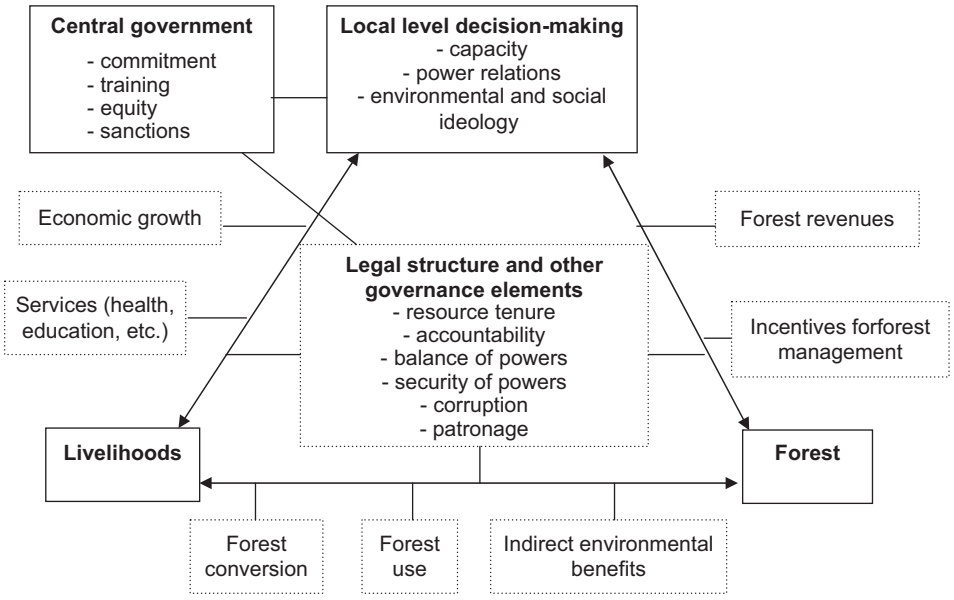

Fig. 1. Framework to analyse decentralization, forest management and livelihoods relationships.

extent than otherwise possible. I treat the CBNRM motivation as a hypothesis and consider it in the following section.

The next section considers three key hypotheses and one assumption that underpin the theory and the narrative of decentralized forest management.

3. Hypotheses about decentralization, forests and livelihoods

3.1. The democratic decentralization hypothesis

Democratic decentralization clearly has a significant role in the theory and narrative of decentralized forest management outlined above. It is seen as a necessary means of institutionalizing and scaling up CBNRM (e.g. Ribot, 2002b). Decentralization reforms are not delivering on their objectives because, according to Ribot (2002b), they do not transfer sufficient power to local institutions and the latter often do not represent and are not accountable to local communities. This argument raises a hypothesis and a question. The hypothesis is: democratic decentralization in the form presented in the previous section is possible. The question is: what would be the implications of fully democratic local governments? The hypothesis is considered below while the following subsections contribute to addressing the question.

That democratic decentralization in forest management is not actually taking place in the ideal form stated in the theory has been noted in the literature (Ribot, 2002b; Larson, 2003; McCarthy, 2004; Ribot et al., 2006). It may actually be very difficult to implement it in countries with relatively poor governance systems typical of most tropical forest countries.[3] Many countries have weak representative decision-making processes and local elites and vested interest groups can often manipulate the institutions and opportunities created by decentralization for their own benefit (Litvack et al., 1998; Francis and James, 2003). Numerous studies have shown that seldom decentralization has brought about improved governance through the promotion of local accountability and transparency and by enfranchising local populations (Francis and James, 2003). However, the fact that there are cases in which decentralization has led to improved governance, such as in Bolivia (Rowland, 2001), indicates that it is a difficult but not impossible objective to reach, at least in relation to the decentralization of services.

Concerning the effects of decentralization on corruption, the jury is still out. Fjeldstad (2003) finds that theoretical studies present reasons explaining how decentralization can both lead to increased or decreased corruption. The author also finds that cross-country regression studies, single-country econometric studies, and case studies are similarly inconclusive. However, corruption in the (commercial) forest sector appears to be rather pervasive particularly in tropical countries (Barbier et al., 2005; Smith et al., 2007), as a result of the presence of high rents to be extracted (Rose-Ackerman, 1999). Corruption is therefore more likely to affect the decentralization of forest management than the decentralization of services.

These points indicate that the theory of decentralized forest management highlighted above contains a certain degree of contradiction. Decentralization is advocated, among other arguments, because central governments have mismanaged resources, supposedly because of weak governance systems and possibly corruption. However, they are expected to transfer powers to local governments while supporting accountable and transparent governance systems at the local level. It would seem appropriate therefore to ask why central governments could not be expected to develop improved governance systems at the central level and avoid mismanaging forest resources.

The above discussion implies that the initiation of policy reforms will encounter significant obstacles in creating the ideal democratic decentralized system. Let us assume, however, that democratic decentralization in its ideal form could be implemented. Its outcomes would depend on the hypotheses discussed below.

3.2. Hypothesis about CBNRM and sustainable forest management

CBNRM is said to have the potential to improve livelihoods while resulting in positive ecological outcomes (Ribot, 2002b; Larson, 2003). Successful CBNRM implies that rural people benefit from forest conservation (otherwise they would clear the forest). It is useful to treat the success of CBNRM and the benefits rural people derive from forest conservation as separate hypothesis for the following reason. CBNRM implies management of resources within a common-property system. However, rural people may have, or prefer, private access or property rights. Therefore, CBNRM is not the only option that should be considered for increasing local people access to resources. Moreover, and probably more significant, decentralized forest management is not a necessary condition for increased access to resources. Rights to resources, be they in the form of common or private property, are the key determinants of access and they can be granted under either a centralized or a decentralized government system. This issue is further considered in the conclusion.

The hypothesis that CBNRM has the potential to improve livelihoods while resulting in positive ecological outcomes is disputed. CBNRM has taken on a variety of definitions in different countries but there has been a convergence of meanings which, according to Blaikie (2006), encompass three key aspects. First, there is a community understood as a spatial unit, a distinct social structure, and a set of shared norms. Second, it involves the notion that community management is well suited to

[3] Governance levels are correlated with income levels (Kaufmann et al., 2006), and tropical forest countries tend to have low to medium income levels.

implementing scientific sustainable resource management. Third, CBNRM promises a range of benefits that are predicted by the social science theory which underpins it, i.e. mainly common-property management theory. The implementation of CBNRM has encountered limited success partly as a result of the flawed assumptions that underpin these three defining features (Blaikie, 2006). While it is beyond the scope of this paper to summarize those problems, it is useful to note the result of a recent test of the common-pool resource management theory. Many factors affect resource management decisions and it is not possible to say whether sustainable resource management will eventuate even if the key theoretical requirements of common-pool resource management occur (Agrawal and Chhatre, 2006).

With regard to the narrative related to CBNRM, Blaikie (2006) argues that while donor organizations and NGOs have often claimed the success of CBNRM, there have been very few assessments of the actual outcomes of CBNRM activities. It is fair to say that to a certain degree the lack of success was influenced by the state's unwillingness to transfer power to communities (Blaikie, 2006). This issue points to the importance of the constraints presented by the lack of implementation of democratic decentralization processes previously discussed. Blaikie (2006) notes, however, that the complex number of factors required for successful CBNRM, as stated by common-pool resource management theory, is also a significant limiting factor. That is, it is difficult to find cases that present all the right conditions for successful CBNRM, and it would be difficult to scale up CBNRM through decentralization processes which in effect affect large areas of the territory and all communities in forest areas.

Concrete cases of community-based forest management may be taken to indicate that, despite the problems concerning the theory, CBNRM can actually work. The case of Mexico has been described as a possible model, with communities possibly controlling as much as 80% of the forests and exploiting them commercially (Bray et al., 2003; Antinori and Bray, 2005). However, community land use decisions have also resulted in deforestation and Mexico has one of the highest deforestation rates in the world (Alix-Garcia et al., 2005). Communities also control large forest areas in Kumaon (India), and exploit them for non-commercial uses (Agrawal and Ribot, 1999). The description provided by the latter authors suggests that this case is more successful than that of Mexico. These practical examples show that community-based forest management can result in sustainable management or deforestation as noted by Agrawal and Chhatre (2006).

3.3. *Hypothesis about rural people's benefits from the forest and its conservation*

The hypothesis that rural people benefit from the forest and will conserve it if they controlled it is partly based on a 'romantic' view, which underpins some of the literature on CBNRM, that communities live in harmony with natural resources (McCay, 2001). People living in or near forests are defined as forest dependent, natural resource dependent and pursuers of traditional and sustainable livelihoods (Li, 2002). This view has been thoroughly disputed (Redford, 1990) and while there are cases in which local people have conserved forests and other resources in their natural state, conservation should not be presumed (Tacconi, 2000). What is most important to consider, however, is the actual contribution of forests to peoples' livelihoods. This is particularly important because if the benefits from the forest are higher than those from other land uses people might conserve it for utilitarian reasons, no matter whether they control it in common or through private rights.

Livelihoods benefit from the use of forests and forestlands through conversion of forests to other uses, direct use of forest products, and indirect environmental services (Fig. 1). Forest conversion, a long-term historical trend associated with economic change and development (Williams, 2003), involves the substitution of forests with other land cover types, such as annual and perennial crops. The literature indicates that forests often have a lower capacity to support livelihoods than other land uses. For example, in eastern Indonesia a hunting-gathering system supports up to 3 people/km^2, a shifting cultivation system about 30 people/km^2 and a savanna-based palm system up to 120 people/km^2 (Monk et al., 1997). In Sumatra, Indonesia, the economics of land use (Table 1) is clearly not in favour of sustainable forest management. Rural people are interested in using resources at their disposal, which may involve logging and converting forests to agricultural land use, as demonstrated by the fact that agriculture is 'the leading proximate cause of tropical deforestation' (Geist and Lambin, 2001. p. 24). Furthermore, people may also invest in land clearing to resale the land, that is to speculate (Kaimowitz and Angelsen, 1998). Strictly speaking, forest conversion may benefit livelihoods but it does not represent a contribution of forest management to livelihoods if the focus is on sustainable forest management. There are clearly counterexamples in which rural people manage forests sustainably (Agrawal and Ribot, 1999). The outcomes of community-based or private management systems depend on a range of conditions that include the benefits derived from alternative land uses, and it is possible that in certain cases the benefits of using the forest sustainably outweigh the benefits of conversion or overuse. Those conditions can be expected to mostly apply to areas that are marginally suitable or unsuitable for agricultural development, or when the deforestation phase in the forest transition model has been completed (Rudel et al., 2005).[4]

[4]The forest transition model shows that developing countries first experience a decline in forest cover, normally due to the expansion of agricultural activities, which is then followed by an increase in forested area. As a country develops, the industrial and service sectors provide opportunities for off-farm employment, marginal lands are abandoned and eventually revert to forests.

Table 1
Economics of land use in Sumatra

Land use	Scale of operation	Returns to land at social prices (Rp 1000/ha/yr)	Employment (day/ha/yr)	Returns to labour at private prices (Rp/day)
Natural forest conservation	25 ha fragment	0	0	0
Community-based forest management	35,000 ha common forest	9.4–18	0.2–0.4	11,000–12,000
Commercial logging	35,000 ha concession	−32 to 2102	31	−17,349 to 2008
Rubber agro-forest	1–5 ha plots	73	111	4000
Oil palm	35,000 ha estate	1480	108	5797

Source: Summarized from Tomich et al. (2001) Table 12.2. The study collected information in field sites in Lampung and Jambi provinces, in the peneplain agro-ecological zone, with a maximum altitude of 100 m above sea level and consisting of about 10% of alluvial soils and 90% gently undulating uplands. The data was collected in 1997; the discount rate was 15% and the exchange rate, Rp 2400 = US$1.

Sunderlin et al. (2005), who explore the links between poverty alleviation and the sustainable use of forests, note that forests may contribute to:

(a) poverty avoidance or mitigation by fulfilling a safety net function in times of emergency or in seasonal periods of low income through the provision of forest resources; and
(b) poverty elimination through the contribution of forests to lifting people out of poverty.

These two hypotheses have still to be tested under different ecological, social and economic conditions. We do know, however, that the widespread use of forest products provides a safety net function in some cases, even if rural people tend to minimize their reliance on the forest safety net when other resources allow them to do so (McSweeney, 2004; Pandit and Thapa, 2004). The collection of wild non-timber forest products may supplement the income of the very poor but has little potential to contribute to poverty reduction (Neumann and Hirsch, 2000). Wunder (2001) is sceptical about the contribution of forests to poverty elimination because forestry activities (i) present limited opportunities to increase the benefits received by the poor who produce and consume timber products, and (ii) tend to be relatively capital intensive rather than labour intensive. The evidence presented by Levang et al. (2005) corroborates the arguments presented by Wunder (2001). They find that in Kalimantan the members of the Punan community who live outside the forest, close to services and towns, are not as poor as those who inhabit isolated forest villages.[5]

Finally, indirect environmental benefits accrue as a result of the environmental functions of forests, such as soil and water conservation. It is often assumed that the environmental benefits of forests for local livelihoods are substantial. However, these benefits vary according to many conditions and they may not be as significant as previously thought, as discussed later.

The hypothesis that people benefit from the forest, and would conserve it if they controlled it, may not hold when alternative land uses provide higher benefits than forests. This condition is common given that agriculture is the leading cause of deforestation. This issue is further addressed in the following section to take into account the environmental services of forests.

3.4. The environmental success assumption

An understanding of what constitutes success is needed to judge the environmental outcomes of decentralization. In other words, the 'minimum environmental standards' (Ribot, 2002b) requirement needs to be defined. The environmental success of decentralized forest management has been commonly assumed to equate with lack (or lower rates) of deforestation, or reduced 'overexploitation' of timber (Andersson, 2003; Gibson and Lehoucq, 2003; Larson, 2005). This assumption is based on the view that deforestation is always a negative event that leads to unsustainable environmental outcomes for all the stakeholders. For example, it has been pointed out that in Indonesia greater local control over forests has resulted in an increase in logging contracts with little concern for environmental effects (Larson, 2005). Cameroon and Uganda have had a similar experience, according to Ribot (2002a): the transfer of rights to local bodies resulted in overexploitation[6] of timber. In the context of mainland South-East Asia, Dupar and Badenoch (2002) consider under what conditions decentralization contributes to environmentally sustainable development, a term they leave undefined: the preservation of forest cover is one of the dimensions that require, according to them, the setting of national standards to be adhered to by local administrations and supported by central government enforcement.

The view that deforestation necessarily leads to negative environmental outcomes is common to much of the

[5]Dewi et al. (2005) report cases of villages in East Kalimantan in which forest cover does not seem to be associated with lower well-being levels. Their index of well being includes wealth, education and health. Well-being levels can therefore be significantly influenced by the supply of services by the government. Their findings are not therefore easily comparable with those of other authors who consider income poverty.

[6]The term overexploitation was not defined by Ribot (2002a).

forestry literature (Poore, 2003). However, this view needs to be considered in the context of a range of stakeholders, environmental problems and geographic levels. The replacement of forests by other land use systems does not necessarily result in negative environmental changes, at least at the local level and national level, as recognized by the IUCN guidelines on conservation planning which recognize that in some cases forests may be converted to other uses (Poore, 2003). In relation to biodiversity conservation, work carried out by Conservation International in Mexico shows, for example, that the conservation of a relatively small percentage of forest would result in the conservation of a significant share of the country's biodiversity (Brandon et al., 2005). The implication is that the deforestation of some of the forest areas not included in protected areas would not necessarily lead to an irreversible loss of biodiversity. Recent reviews of the literature also show that forests may not be always as important as previously thought in affecting rainfall and water yields, and in reducing soil erosion, sedimentation and floods (Bruijnzeel, 2004; FAO and CIFOR, 2005). This is partly due to the fact that many of the agricultural systems that replace forests provide good ground cover, and often also include trees. In relation to climate change, deforestation results in emissions that contribute to the rise in temperatures. In that case there is therefore a case for controlling deforestation. The issue is, however, that the negative climate change impacts that arise from deforestation are not clearly linked to local level activities. Therefore, there is a limited or no incentive for local people and local governments to avoid deforestation. In other words, the problem is that many of the costs of conservation are borne at the local level while the benefits manifest themselves more distinctly at the global level (Wells, 1992).

Local people and local governments may have therefore good reasons to carry out deforestation activities, which may also have limited or no (visible) environmental impacts. Therefore, the assumption that from an environmental perspective successful decentralization equates with lack of deforestation is inappropriate. From a local perspective, it should be replaced by the assumption that successful decentralization equates with sustainable local environmental management. I will return to this issue in the conclusion.

We now need to fully consider the potential impacts of democratic decentralization on forests.

4. Decentralization and deforestation

The most obvious direct impact of democratic decentralization is that local governments would listen to local people who, in turn, may advocate deforestation on the basis of the benefits they receive from forest conversion. There are various conditions that influence people decisions as already stressed above and in some cases they may choose not to support deforestation.

Democratic decentralization may create uncertainty over the control of resources during the period in which it is introduced because a certain degree of uncertainty is probably unavoidable in connection with most policy reform processes. This effect may have been present, for example, when Indonesia commenced the introduction of decentralization laws at the end of the 1990s and early 2000s (Casson and Obidzinski, 2002).[7] It cannot be assumed, however, that the uncertainty arising from a specific decentralization process is necessarily a (significant) factor in increased deforestation because other factors could also be at play. To continue with the case of Indonesia, the period in which decentralization was introduced also coincided with a significant deterioration of rule of the law, a trend that had started during the final years of the Soeharto regime (Tacconi, 2006).

Fiscal decentralization can affect forests through decisions taken by local governments concerning the extraction of forest revenues. That is, local governments may decide to support logging and/or agricultural development to increase tax revenues, as appears to be the case in Indonesia (Casson and Obidzinski, 2002) and Bolivia (Kaimowitz et al., 1998). To a certain extent this effect is determined by the first point noted above, that is people may support forms of development that lead to forest clearance.

Decentralization can also have several indirect impacts on forests. First, the most fundamental aspect of decentralization is that it is expected to improve governance (Litvack et al., 1998; Francis and James, 2003). Increased local accountability and transparency could result in the needs of the poor to receive increased attention in local governments' development activities. This may translate into the provision of infrastructure and services (Litvack et al., 1998; Francis and James, 2003). Public services such as education and health tend to attract rural people away from forests (Froment, 2004), while roads increase the profitability of agricultural land uses, facilitate access to forests and increase deforestation (Kaimowitz and Angelsen, 1998).

Second, fiscal decentralization is often assumed to contribute to economic growth (Martinez-Vazquez and McNab, 2003). Economic growth appears to be linked to deforestation (Kaimowitz and Angelsen, 1998), at least in the initial phase of the forest transition model (Rudel et al., 2005). However, it is unclear whether and how fiscal decentralization actually affects economic growth (Martinez-Vazquez and McNab, 2003).

Third, improved governance resulting from decentralization (Litvack et al., 1998; Francis and James, 2003) could result in reduced corruption and limit the use of forest

[7]This statement does not imply that the decentralization reforms in Indonesia conformed to the ideal democratic decentralization model described earlier in the paper. In fact, the forestry regulatory framework has been revised in recent years and does not allow decentralization of forest management, although it has introduced political decentralization.

resources as a means to maintain political power, referred to as patronage in Fig. 1. We have already discussed, however, that it is still unclear how decentralization affects corruption.

The preceding discussion has covered two underlying causes of deforestation which are included in Fig. 1. Population growth can also cause deforestation through demand for agricultural land and products, fuelwood and timber, changes in labour markets and technological change (Kaimowitz and Angelsen, 1998). According to those authors, the empirical evidence on the actual effects of population growth is mixed. They note that at the subnational level population density and deforestation have been found to be positively correlated. However, the correlation does not hold when market access and soil quality are accounted for, while rural population density had a greater effect on deforestation when market access and off-farm opportunities were limited and landownership more equally distributed. Historical evidence shows, however, that the increase in population was a key factor in providing the labour necessary to deforest large areas in Asia, America, and Europe (Williams, 2003). This finding does not certainly imply that population growth necessarily leads to deforestation. In some areas and under certain conditions, population growth has resulted in an expansion of forests (Leach and Fairhead, 2000). We may conclude that increased population density could be expected *in many cases* to increase demands on local governments to allow deforestation.

The conclusion to be drawn from this section is that there is no obvious reason to expect that democratic decentralization will lead to a reduction or avoidance of deforestation. This is due to the following reasons. First, decentralization may actually lead, in some cases, to deforestation as a result of citizens' requests. Second, changes brought about by decentralization may have both positive and negative impacts on forests. Therefore, democratic decentralization would need to be supplemented with other policies to ensure forest conservation.

5. Conclusion

The literature on decentralization has interchangeably used the term decentralized forest management to refer to the transfer of control over resources from the state to local communities and from the central government to local governments. It has also proposed that one of the main reasons to introduce decentralized forest management is to scale up CBNRM, that is, to transfer more control over resources to communities. I argue that this use of the terms and the narrative about CBNRM create a degree of confusion with regard to what constitutes decentralized forest management and, more significantly, how to implement it and what its potential outcomes are. The advantages and disadvantages of transferring control over resources to communities are better considered within whatever paradigm of locally based resource management paradigm is most appropriate, e.g. co-management, joint forest management, common-pool resource based management, or private access and property rights. These resource management systems can, in theory, take place in politically centralized or decentralized states. The design of these systems will obviously have significant implications for forest management that have been addressed in the related and extensive literature. The reminder of this section deals with decentralization of forest management from central to local governments.

Recent literature on forest decentralization has recognized that states are not transferring powers to local governments to the extent recommended by the proponents of decentralization. A brief review of the broader decentralization literature indicates that there have been few cases in which decentralization has actually brought about improved governance. I have noted that the governance literature indicates that there may be structural constraints to improvements in governance and that we cannot expect tropical forest countries, which often have relatively poor levels of governance, to actually implement decentralization processes based on the ideal theoretical model discussed in this paper. Deviation from the ideal model is likely to be the norm.

This paper shows that even if the ideal decentralization model was implemented, forest conservation would not necessarily follow because local people and local governments may benefit from deforestation. This is implied by the theoretical model that includes the effects of economic incentives, but it is not recognized by the narrative associated with forest decentralization. The theoretical model does include the need for minimum environmental standards and the literature on forest decentralization seems to imply that the success of decentralization should be measured on the basis of whether deforestation is avoided or minimized. This assumption implies in turn that the minimum environmental standards should involve avoidance of deforestation. This is a rather circular argument. It implies that decentralization should take place and that it should lead to forest conservation (based on the two hypotheses of the benefits of CBNRM and rural people benefits from forests), but that in any case forest conservation will happen because minimum environmental standards, set by the central government, mandate this. This paper suggests that, from a local perspective, local sustainable environmental management, which may involve a certain extent of deforestation, is a more appropriate goal than forest conservation.

Forests provide national and global benefits. Mechanisms to align global, national and local costs and benefits need to be implemented. In other words, local people and local governments will need to be provided with financial incentives and support to conserve forests. This conclusion is not new. It is now well recognized in the literature on payments for environmental services (e.g. Ferraro and Kiss, 2002). This point leads us to consider some policy

issues related to the implementation of decentralization programs.

According to the principle of subsidiarity, land use management should be decentralized to the lowest level possible unless allocating it to a higher-level unit would result in higher efficiency or effectiveness. Therefore, the ideal option would be to assess the efficiency and effectiveness of alternative management options, when decentralization processes are designed and implemented. The reality is that in many cases decentralization is based on political imperatives and there is little time, or regard, for studying or choosing the management model in terms of its efficiency or effectiveness. In general terms, we could expect the following options to be relevant in many cases. Local people should have communal or private rights to land and forests. Local governments should have authority over most of the land use planning decisions. Depending on the size of watersheds, decisions related to hydrological concerns would have to be considered at local intergovernmental and higher levels as appropriate depending on size of watersheds. The national government should have primary, but not sole, responsibility for biodiversity planning. How biodiversity is managed will depend on ecological, social, financial, capacity and historical considerations. Biodiversity planning and planning related to potential carbon-related schemes need to occur at the national level and implemented with appropriate management systems that involve local governments and local people. Financial rewards for conservation would be required as noted above, and they can be made compatible with customary claims to land and its resources (Tacconi and Bennett, 1995). To summarize, the following aspects will need to be taken into account in designing decentralized forest management systems:

- clear and appropriate authority and responsibility assigned to the various levels of government and other stakeholders, including community groups where appropriate;
- specific objectives and indicators for management at various ecosystem levels by central and local governments, and other stakeholders;
- participatory planning, monitoring and evaluation of performance; and
- performance-based financial support and penalties for local governments linked to agreed environmental standards.

It should be obvious that the implementation of these measures suffers the same governance constraints noted earlier in relation to the implementation of the theoretical democratic decentralization model.

Finally, this paper clearly does not imply that the transfer of control over resources to communities, rural people or local governments should not happen. There are equity, poverty alleviation and political reasons that may even strongly support resource transfers and decentralization of powers that have not been addressed here. The foregone discussion does caution, however, about the negative environmental impacts that may arise from those transfers. They should be taken into account in the design of decentralized systems.

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