CIPS
Center for Indonesian Policy Studies

Reducing Deforestation by Strengthening Communal Property Rights

CIPS Policy Recommendations No. 2: June 2015

Forest Ownership and Management in Indonesia

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www.cips-indonesia.org

Executive Summary and Policy Recommendation

Despite a moratorium by the Indonesian government rejecting new logging concessions since May 2011, Indonesia saw 840,000 hectares of forests cleared in 2012 and deforestation levels continue to increase at an alarming rate every year.

International experiences have shown that chances of sustainable long-term forest management improve when the ownership and management of forest resources remain with local communities. Once they have secured long-term access to resources through property rights they become confident enough to widen their time horizon and to invest in sustainable forestry practices.

However, Indonesian forests are owned by the national government, which then delegates management rights to local levels of government. The ensuing struggle over control of forest resources between all levels of government caused weak legal and regulatory frameworks and a major barrier for sustainable forest management.

Considering these complexities of forest governance, there is no simple way towards sustainable forest management and to the prevention of further deforestation. Nevertheless, several case studies from Indonesia and abroad can serve to inspire the following policy recommendations in Indonesia. They are based on the existing Indonesian system of forest classification and allowable land uses.

For-profit businesses should be allowed to build and manage eco-tourism facilities in conservation forests (*hutan konservasi*). These activities will support the preservation of ecosystems and biodiversity.

Protection forests (*hutan lindung*) are meant to prevent floods, control erosion, and maintain soil fertility. For their sustainable management, usufructuary rights should be granted to local communities allowing them to manage these forests and giving them limited rights to access forest resources.

Finally, production forests (*hutan produksi*), where timber and non-timber products can be extracted, should either be handed over to local communities or be privatized. The national government should move away from approaching those forest areas as a source of national state revenues. Instead, it should allow these resources to support local income generation and growth.

Background/Analysis

Existing data puts Indonesia's forests in a critical situation. The marginal loss of forest cover has been increasing by an average of 47,600 hectares every year, reaching 840,000 hectares in 2012 alone.[1] As a result, Indonesia ranks number 6 of the top carbon dioxide emitting countries, and is the most intense greenhouse gas emitter globally.[2]

Despite the Indonesian government's commitments to the international community and a 2011 deforestation moratorium covering 43 million hectares of land[3], the statistics above indicate that government efforts have done little to curb rates of deforestation[4]. So far, the country's weak governance system combined with a lack of respect for the rule of law and an insufficient protection of property rights have hindered progress in sustainable forest management practices.

The policy directive TAP MPR IX/2001 is considered to be the most explicit and important legal statement on the governance of natural resources. It requires the government to review, rationalize and harmonize laws concerning the management of Indonesia's natural resources.[5] However, besides clearly stating the government's dominance in governing forests and natural resources, the relevant laws remain vague and conflicting. This has invoked a struggle over forest resources between central and regional governments.

Regional Autonomy Law 22/1999, born from the country's rapid decentralization policy after the Suharto regime, initially granted district and municipal governments authority and responsibility over policy areas, such as environment, agriculture, and land, within their territories. Calls for more clearly defined roles of central and local governments led to the amended law 32/2004. The new law was to create "harmonious relations between the Regions and the [central] Government"[6] but it awarded the center and the provinces much influence and control over local governments through supervising and monitoring their decisions and policies[7]. Latest plans of the Indonesian government will remove the rights from the 500 districts and municipalities and reallocate them to the provincial level. This has been strongly criticized by district governments.[8]

According to Article 33 of the Indonesian constitution, "the earth and water and the natural resources contained within them are to be controlled by the state".[9] The Basic Agrarian Law of 1960 (BAL), and Forestry Law 41 of 1999 provide the central government with the explicit authority over all forests.[10] BAL and Law 41/1999 grants the Environment and Forestry Ministry the authority to exercise forest utilization and management rights, while the National Land Agency (BPN) grants and recognizes rights over forestland (*kawasan hutan*)[11].

According to Indonesian laws, all land identified as forestland falls under the authority of the Environment and Forestry Ministry while 'non-forest areas' or APL (*area penggunaan lain*) generally fall under the authority of district and municipal governments.[12] The Indonesian government has further classified forestland as Conservation Forests (*Hutan Konservasi*[13]), Protection Forests (*Hutan Lindung*), and Production Forests (*Hutan Produksi*) in order to manage the use of state forest estates. This classification was done by consensus ("*Paduserasi*") between local governments and the Environment and Forestry Ministry. The process resulted in the national government legally claiming 120 million hectares as *kawasan hutan* or state-owned forestland.

Table 1
National forest classification in Indonesia

Forest Classification	Function[14]	Area (Ha)
Conservation Forest	To preserve animal and plant biodiversity, and life supporting ecosystems.	20,500,988
Protection Forest	To prevent floods, control erosion, and maintain soil fertility.	33,519,600
Production Forests Limited Production	Allows limited and selective extraction of timber and non-timber products	23,057,449
Permanent Production	Allows production, including timber plantations, and the clear-cutting of forests	35,197,011
Convertible Production	Allows plantations and can be converted into 'non-forest areas' for non-forestry activities	8,078,056
Total		**120,353,104**

Source: Anne Rosenbarger et al., How to change legal land use classifications to support more sustainable palm oil in Indonesia, World Resource Institute: Issue Brief, 2013, p.7.

Contrary to the results of the classification process, it has been estimated that 61% of that forestland has been inaccurately classified without properly defining and representing the ecosystems that actually exist on the ground.[15] There are reported instances where forests with a high conservation value or land with high ecological significance have been classified as 'non-forest areas' (APL). On the other hand, land with severely degraded forests or no forests at all were classified as forestland.[16]

The sound management of Indonesia's forest estates has been further convoluted and impeded by the lack of publicly available data about forest areas, by conflicting data of forest boundaries and types of forests within forest areas, by the lack of adequate and efficient procedures and mechanisms for the granting of land use permits, as well as by inconsistent goals for conversation efforts and the use of forest resources.[17]

Resulting classification errors as well as governance and management problems have led to the clear-cutting of forests with high ecological value for the sake of palm oil plantations.[18] Moreover, inaccurate forest mapping and overlapping forest governance rights have lead to disputes and even violence between authorities, the private sector, and local communities around and within forestland.[19] Finally, ambiguous land demarcation and unclear designation of authority over forests have impacted spatial planning efforts by regional governments.[20] This potentially undermined the sustainable management of regional industries and agriculture[21].

A Case for Property Rights

Since the problems mentioned above are complex and take much time and effort to resolve, it is advisable to implement more feasible steps in the realm of property rights reforms in order to tackle Indonesia's deforestation problem. The benefits of establishing protected property rights for the protection of the natural environment have long been established. There is a wealth of literature on actual property rights regimes and their effects on common property resources, such as forests, and on climate change.[22]

Property rights approaches to environmental protection are based on the belief in a strong correlation between secure property rights, local economic growth and environmental protection.[23] They are driven by the assumptions that a) economic actors seek their own individual benefit and welfare, and that b) only protected property rights allow them to turn their attention from short-term to long-term benefits derived from natural resources.

When local economic actors seek to raise their individual income and welfare they may over-exploit common resources, such as forests. They are more likely to do so, if the benefits of over-exploitation outweigh the risks and costs involved. If it pays

out, they act against existing rules and regulations for environmental protection seeking their own short-term benefit. Increasing alternative income opportunities, on the other hand, change the equation and make it less attractive for economic actors to break environmental regulations. As our case studies in the following chapter point out, they will be more likely to engage in less exploitative economic activities, such as ecofriendly tourism services.

Unprotected property rights are the other main reason why individuals, corporations and communities over-exploit resources for their short-term benefit. These short-term interests are generally the reason for exploitation practices that cause the degradation and depletion of Indonesian forests. In contrast, reliable property rights regimes raise the confidence of populations living around and within forests to invest in sustainable forest management practices and innovations to increase their long-term benefit from natural resources.[24] In addition, protected property rights also provide actors with access to financial markets. As such, property rights provide a 'safety net' that reduces risks and vulnerability from unexpected external shocks.[25]

When comparing international levels of property rights protection[26], Indonesia only ranked 59 out of 97 countries in the International Property Rights Index (IPRI) of 2014 (Table 2). The index disclosed severe shortcomings in the independence of the Indonesian judiciary, the rule of law, and the control of corruption in the country. These factors aggravate problems resulting from governance issues In Indonesia that were described earlier in this paper. All together culminate in a strong predicament of local governments that actually seek to reduce deforestation and environmental degradation.

Table 2

Indonesia's Ranking in the International Property Rights Index (2014)

Category	Global Ranking	Indicators[27]
Overall	59 out of 97 countries	
Judicial Independence	53/97	Judiciary independent from political influence or members of government, citizens, or firms.
Rule of Law	66/97	Combines several indicators, including judicial independence, respect for law in relations between citizens and the administration, property rights, confidence in the police force, enforceability of contracts, direct financial fraud, law and order.
Control of Corruption	73/97	Combines several indicators, which measure the extent to which public power is exercised for private gain, including petty and grand forms of corruption, as well as "capture" of the state by elites and private interests.

Source: 'Report: Indonesia', The International Property Rights Index, 2014

The district of Wonosobo in Central Java provides an example for this predicament. The district government regards most programs by central government agencies as ill informed and uncoordinated. The Environment and Forestry Ministry, for instance, supplies regular cash to villagers who are supposed to buy and plant tree seedlings. These handouts are not subject to any impact assessment and merely create expectations by the farmers for short-term cash payouts. Local officials regard these programs as undermining the preparedness of villagers to participate in long-term sustainability programs.[28]

The struggle between central and local governments is being aggravated by property rights issues, for example in the case of Buntu village on the Dieng Plateau, which stretches into the boundaries of Wonosobo district. It is an area of ecological importance for its river systems and it holds economic development potential in the form of geothermal power and its attractiveness for tourists. The district government has previously held awareness campaigns in villages on the Dieng

Plateau. They managed to raise awareness for the importance of local forests as they reduce the risk of floods and landslides in this mountainous area.

However, the production forests (*hutan produksi*) on the Dieng Plateau are under the authority of the central government's Environment and Forestry Ministry and are managed by its state-owned forestry corporation, Perum Perhutani. When Perum Perhutani announced it would cut down trees for timber production, villagers in Buntu, which borders these forests, vehemently objected to the operation through a formal petition to the district government.[29] They expressed their concern that deforestation on the hills surrounding their village might result in floods and landslides.

It's a positive sign that villagers are more aware of environmental risks brought about by deforestation. However, the forests around Buntu village are being managed by the central government through its state-owned company and the district government is losing its authority to the provincial administration. If the forests were to be managed by the village itself it would serve to protect Buntu village and the environment of the Dieng Plateau and it would transfer income opportunities from Perum Perhutani to this small village in the heart of Java.

Property rights reforms have enhanced sustainable resource management in a number of cases around the world. These cases demonstrate how property rights reforms can prevent deforestation and encourage reforestation.[30]

Stronger Community Involvement as Alternative Models for Forest Management

There are successful experiences in poor communities worldwide that prove how community and private sector involvement can be a viable path for sustainable forest management and income generation for low-income households. The following cases are just a sample of those that inspire their potential replication as well as wider policy recommendations for Indonesia.

Community Forest Management in Nepal

The community forest management program in Nepal is considered to be a success story for reforestation and improved livelihoods. It has increased rural household incomes and it safeguarded the ecology of their forestlands. A study of datasets from 55 forests on the middle hills and the Terai plains of Nepal observed a significant degree of reforestation after large-scale forest clearing had happened in the past. The study confirmed that the Nepalese land tenure regime and local monitoring were of central importance for this successful reforestation.[31]

Underpinning Nepal's success has been a well-defined legal and regulatory framework with a Master Plan for the Forestry Sector that recognized the importance of local community participation. The Forest Act of 1993 recognized the rights of local communities to take full control over state-owned forests under a community forest management scheme. The Act provided village residents with the authority to make management decisions regarding forest resources. A series of government guidelines and directives clarified the role of community forest user groups (CFUGs) and guided the implementation of community forestry. They specified restrictions on forest usage and occasionally also on certain species. In short, the state remains the owner of the forests but the communities hold the rights to use and manage the forests.[32]

Essentially the Act of 1993 identified local peoples

as CFUGs and afforded them the right of self-governance, forest management and utilization. Based on this policy and the recognition of community rights, Nepal's Ministry of Forest and Soil Conservation dropped its traditional policing role and turned into a facilitator of community institutions.[33]

By 2009, Nepal's community forest management program included 1.6 million people, or one third of Nepal's population. They managed 1 million hectares, or a quarter of Nepal's state forests[34]. As a result, a study shows CFUGs have increased the average annual household income of forest user from USD 710 in 2003 to USD 1,512 in 2008 through forest-based products such as spices and resin, to name just a few.[35] The generation of more income went along with the creation of community-based forestry enterprises with 90 percent of employment going to those from poor or very poor households.[36] Moreover, access to a range of forest resources has allowed households to diversify their incomes, which reduced their dependency on one particular forest product and the risks associated with the volatility of particular commodity prices.

Meanwhile, there are several other effects of the Nepalese forest management system on rural livelihoods. A profit-sharing scheme has enabled CFUGs to fund public infrastructure projects such a power plants and watershed management facilities.[37] Through this, Nepal's community forest management program has fostered 'inclusive growth' and also democratic participation on a grassroots level. CFUGs are constituted to include participation from all households; their management and operations require input from all individuals. This empowered traditionally marginalized groups, such as women whose participation in CFUG Executive Committees increased from 15 women (77 men) at the time when the committees were formed to a total of 43 women (78 men) in 2008.[38]

In short and most importantly, what sustains the community forest management system in Nepal is its tenure security. It is this secure access to forest resources that encourages communities to maintain sustainable practices and to invest time and efforts into forest management.[39]

Usufructuary Rights and Tree Ownership in Niger

Land regeneration and community forestry have created another success story in the Sahel region of Africa.[40] Many had perceived the desertification of Niger's agricultural land as irreversible after it had been hit by deforestation and severe drought during the 1970s -1980s. Today, 5-6 million additional hectares of land are covered by trees - all as a result of farmer incentives and community efforts. According to the World Bank, the "transition from state ownership of trees to de facto recognition of individual property rights" was key to this transformation.[41] What happened?

Since before the independence of Niger, trees and all forest resources were owned by the state.[42] The Forest Code of 1974 regulated all matters in 'classified' and 'protected' forests of Niger but government lists of protected trees went beyond the forest domain and included the economically most valuable tree species in the entire country. Without any rights on their own, farmers came to see the trees as obstacles on their farms and they also had to fear being fined or even imprisoned if caught harvesting any tree products. In addition, as theft of trees was rampant, farmers also preferred to harvest the trees themselves instead of losing the wood to others.

This attitude only changed when desperations in Niger escalated after severe droughts and famines in the early 1970s and 1980s. With the introduction of the farmer-managed natural regeneration (FMNR) system in the early 1980s farmers began to abandon traditional farming techniques and allowed trees in their fields to regrow, which produced food, fodder, fuelwood, and other goods. FMNR is basically a low-cost, sustainable land-restoration technique that involves the systematic regeneration and management of trees and shrubs from tree stumps, roots and seeds.

Given the success of the FMNR system, the government of Niger began to discuss rural land and natural resource tenure issues and gradually changed the legislative framework. In 1993 it formulated 'Principles for a new Rural Code' that strengthened local rights to protect, manage, harvest and benefit from on-farm trees.[43] The

Forestry Code of 2004 did not establish individual or community ownership of trees but it formally recognized the right to use forest resources. This was generally understood as the de facto recognition of individual property rights.

From a land tenure perspective, the government had moved to recognize the communities' "usufructuary" rights[44] to forests resources. With the new forestry code it responded to pro-environmental beliefs among local communities[45] and it started to encourage farmers and communities to take on tree planting and engage in sustainable forest management. The accompanying transformation of Niger's state Forestry Services from the enforcer of forest usage restrictions to a facilitator of community participation sent further signaled to farmers that it is worth their time and effort to nurture trees on their land.

Since 90 percent of Niger's population live off agriculture, the benefits of nurturing trees has helped even the poorest communities. According to some estimates, the application of FMNR and the granting of usufructuary rights in Niger led to 200 million new trees on 5 million hectares of farmland which produces 500,000 tons more grain and USD 56 more benefits per hectare per year. The improvement of soil, animal fodder and firewood supplies has improved the life of an estimated 2.5 million people in Niger.[46]

The factors that have allowed successful land regeneration in Niger have been that a) farmers themselves were involved and initiate their own innovations that are most suitable for their lands; b) strong community or village support through institutions and local leadership; and c) secure property rights over forest resources, whether it be usufructuary rights or full ownership.

Community-Based Plantation Forests in Gunungkidul, Indonesia

Since the government generally owns all Indonesian forests, community forestry has only been applied on a very limited scale and only on land specifically designated by the Environment and Forestry Ministry for community forestry. This includes the district of Gunungkidul outside the city of Yogyakarta.[47] The area of Gunungkidul was once a degraded and arid area from years of deforestation. It has since been reforested with tree plantations, which have been grown by cooperatives of smallholders.

According to Law 25/1992 Indonesian cooperatives are legal entities whose members cooperate for their economic betterment and this also guides the plantation cooperatives in their business decisions. Some cooperatives, such as Koperasi Wana Manunggal Lestari and Koperasi Wana Lestari Menoreh in Gunungkidul, choose sustainable plantation practices and gained sustainable forestry certification from the Indonesian Ecolabelling Institute (Lembaga Ekolabel Indonesia) for their timber products. This allows them to sell certified timber at prices that are 10-15% higher than those of uncertified producers.[48]

Farmers in Gunungkidul derive most of their short-term income from agricultural crops and animal husbandry. They look to their trees as assets and keep them as some sort of long-term savings deposits.[49] If they wait for a tree to grow mature, it can fetch around 4 million Indonesian Rupiah (USD 300). However, farmers from low-income households often cannot wait and cut their trees when extra cash is needed. Thus, the access to formal credit schemes is important for the sustainability of smallholders' timber plantations[50] Cooperatives like Koperasi Wana Lestari Menoreh work with local credit providers such as Credit Union Kharisma Taliasih that provide loans of up to 60 percent of the tree value.[51]

While some cooperatives in Gunungkidul focus entirely on sustainable timber plantations, others, such as Koperasi Serikat Petani Pembaharu, also grow fruit tree plantations that, besides the revenues from fruit harvests, also serve the additional aim of preventing landslides and maintaining groundwater levels. The collaboration of both cooperatives in Gunungkidul created 40 hectares of certified wood plantations in 2012 and the intercropping of trees help provide short-term income.[52]

With sound management production capacities, Gunungkidul provides an example how certified timber plantations, together with other short-term crops, enhance land regeneration and long-term incomes of the households involved.[53] Similar to the

international experiences mentioned above, the involvement of communities in Indonesia proves to be vital for sustainable forest management.

Public Private Partnership in Kinabalu Park, Malaysia

The Kinabalu Park covers an area of 754 square kilometers around Mount Kinabalu in Malaysia. In 2000, UNESCO granted it the status of a World Heritage Site because of its global importance as a 'Centre of Plant Endemism' with an outstanding range of naturally functioning ecosystems. According to the UNESCO, the park "remains in an excellent state of conservation", even though the UNESCO identified significant threats, such as adjacent land uses, encroachment, a need for capacity building, etc.[54]

Since conservation is such a fundamental challenge to national parks in Indonesia and elsewhere, it is worthwhile to discuss the reasons for the successful conservation of the Kinabalu Park. The park is being overseen and managed by the Malaysian government through the Sabah Parks organization. In 1998, it was decided to privatize the park's hotel accommodation, restaurants and souvenir shops in order to improve tourism facilities. A 30-year lease agreement was granted to a private company to reduce the burden of the state government in terms of administration, financial and human resources. The Kinabalu Park has since been a public-private partnership.[55] The government monitors and manages the conservation of the park while the private sector develops and maintains the tourism facilities.

The privatization of the tourism facilities in Kinabalu Park aimed to increase revenue generation from park visitors. Improvements in the tourism business were also to create jobs for the local population, and the increased number of park visitors was to develop more businesses in external areas adjacent to the park. This improvement of the livelihood of local communities through employment and business opportunities as well as infrastructure development is important for the conservation of the park's ecosystems. It potentially reduces the illegal logging and the encroachment and clearing of forestland by local communities for crop production and grazing, which all constitute severe threats for forest conservation.[56]

An academic assessment several years after the privatization of the tourism facilities found that revenues generated from eco-tourism did not channel funds into conservation–related research and training programs. Instead, the money went into the development and improvement of new tourism-related facilities and activities.[57] However, the assumption that tourism revenues should be spent on conservation expenses fails to fully acknowledge the benefits of this public-private partnership. The generation of revenues for park conservation is only a minor function of private sector involvement. More importantly, the profit-orientation of a rational and effectively operating private tourism company provides the best incentives to keep natural ecosystems in pristine conditions.

This should also include the incentive for the private company to contribute to the livelihood of the local communities. However, the same study of the tourism facilities in the Kinabalu Park that was mentioned above also lamented that local communities did not report an increase in job opportunities. They were rather found worrying about their job security after being employed by a private company. Moreover, they reported they did not participate in the local economic development in other ways than being employed.[58] This is indeed a reason for concern because of the importance of local community involvement for the prevention of their encroachment into conservation forests.

Another reason for concern in the Kinabalu Park management, are reported cases of monopolistic behavior by the firm that operates the tourist facilities. There was no open bidding process when the firm was selected in 1998 and signed the 30-year lease agreement.[59] The lesson learnt is that the involvement of the private sector must avoid monopolizing services and should, instead, allow for open competition of service providers. A lack of competition from other businesses can lead to monopolistic pricing and the quality of services and goods will not meet visitor expectations.

All in all, however, even decades after Kinabalu was declared a national park in 1964, the UNESCO still lauds the excellence of Kinabalu Park. It stated that

"threats from encroachment remain minimal" due to levels of patrolling and clearly defined and marked boundaries of the park.[60] In this statement UNESCO overlooks the importance of the local communities but the fact that there is little encroachment into the conservation forest proves they are able to making a living without exploiting forest resources and harming precarious ecosystems. The tourism business in Malaysia certainly contributes to that end.

Policy Recommendations

Considering the complexities of Indonesia's weak legal framework and forests governance, a top-down approach is unlikely to lead to sustainable forest management and the prevention of further deforestation. As cases around the world have indicated, successful efforts to prevent deforestation and to manage forests sustainably come from grassroots communities living around and within forest areas. They need the government to grant them secure access to forest resources. As we have seen in examples mentioned previously, it is only after communities have acquired secure access through property rights, that communities are confident to commit to long-term investment into sustainable forestry practices, and stimulate rural economies.

Indonesia's moratorium on deforestation provides an opportunity to improve and strengthen the legal framework and governance of the country's forests. The recommendations below take advantage of this opportunity and provide alternative models that afford property rights to local communities and the private sector allowing them to engage in, and contribute to sustainable forest management. The policy recommendations follow the classification of Indonesian forests according to Law 41/1999 on Forestry.

Attract for-profit businesses to build and manage eco-tourism facilities within conservation forests (*Hutan Konservasi)*

As the laws allow for limited tourism in conservation forests, we suggest attracting for-profit businesses to develop tourism infrastructure and services with minimal environmental impact, such as nature tour guides, souvenir shops, walkways, restaurants, and accommodation for park visitors.

Since government institutions do not have the capacity in terms of expertise, funds and human resources to manage such services, the entry of for-profit businesses provide additional job opportunities for local communities in areas around the forests. They start their own business, become tour operators, or get employed in hospitality services. Tourism companies also help collecting conservation fees that increase revenues for the government's conservation agenda.

The process of negotiating long-term contracts between government, businesses, and local communities provides an opportunity for all parties to find a legally binding settlement on land demarcation, and their scope of work. This sets into motion the process of designating park boundaries where businesses and local communities can or cannot operate.

In learning from the case of the Kinabalu Park, a public private partnership must allow multiple operators to compete in a fair and transparent procurement process that, in the end, will ensure affordable access for Indonesian visitors and a sufficient quality of services. Government institutions must have clear conservation goals and indicators to properly guide their negotiations

with businesses and local communities. Combined efforts of both, the public and the private sector, towards proper spatial planning within and around forest boundaries will allow local populations to attract visitors to the forests, to create businesses, and to make a living out of secured and well conserved forest areas.

Afford local community cooperatives with usufructuary rights to manage protection forests (*Hutan Lindung*)

Protection forests support ecological systems that prevent floods, control erosion, and maintain soil fertility. In order to improve the function of these forests, we suggest that local communities are given usufructuary rights or limited tenure rights to manage those forest resources. The example from Niger has indicated that the mere perception of farmers and local cultivators reaping secure long-term benefits from forest resources was enough to encourage sustainable practices that enabled them to regrow their trees, generate income, and stimulate growth of the local economies.

The case of community forestry in Nepal suggests that the local population needs to get organized in legally recognized committees or cooperatives in order to engage in community-based forest management. These cooperatives involve members of each household as 'shareholders' and they appoint local leaders to guide the group's cultivation activities and harvests.

Such cooperatives have several legal precedents in Indonesia in the form of community forests (*Hutan Rakyat*). Expanding the scope of community forestry can begin with communities that already manage forest areas efficiently on a de facto basis. Granting them limited land tenure rights provides them with the legal security to sustainably manage and use forest resources.

Grant community ownership or privatize production forests (*Hutan Produksi*)

The Environment and Forestry Ministry should move away from seeing production forests as a source of state revenue.

Instead, forests that are designated for timber plantations should either be privatized or afforded to community cooperatives in order to stimulate the growth of rural economies, like in the case of Gunungkidul. Here, the involvement of community cooperatives carried the additional benefit of involving local households in value-added industries for wood-based products, and it encouraged greater financial inclusion through access to financial services.

Granting local communities long-term leasehold also gives them legal security against threats from external parties. The case of Buntu village on the Dieng Plateau in Central Java illustrates this point as villagers feared for their safety due to the planned activities of the state-owned company Perum Perhutani. Given their higher levels of awareness for the protective role of local forests, local communities are in a better position than the national government or its state-owned company to make decisions on the appropriate amount of logging and the sustainable use of other forest resources.

In any case, the accurate classification of forestland is of paramount importance and must be accompanying any reform effort. In the case of Buntu village, the villagers understand the importance of local forests for the protection against floods and landslides but the forests are legally classified as production forests, which allows for their total clearance. Especially in the case of production forests, there must be an audit of land to ensure that the classification is accurate and does not contain forests with a protective function or a high conservation value.

Notes

[1] Belinda Margono, 'Primary forest cover loss in Indonesia 2000-2012', *Nature Climate Change*, 2014, cited in *World Resources Institute*, 'New Study Shows Indonesia Losing Primary Forest at Unprecedented Rates', 2014, retrieved 02 April 2015, <http://www.wri.org/blog/2014/06/new-study-shows-indonesia-losing-primary-forest-unprecedented-rates>

[2] *World Resources Institute*, '6 Graphs Explain the World's Top 10 Emitters', 2014, retrieved 04 May 2015, < http://www.wri.org/blog/2014/11/6-graphs-explain-world%E2%80%99s-top-10-emitters >

[3] *World Resources Institute*, 'Indonesia Extends its Moratorium: What comes next?', 2013, retrieved 28 April 2015, < http://www.wri.org/blog/2013/05/indonesia-extends-its-forest-moratorium-what-comes-next>

[4] Nonetheless, the moratorium provides a chance to strengthen the country's governance over its forests and seek alternative and inclusive models to protect the forests in Indonesia. See: Hans Nicholas Jong, 'Forest Moratorium to be improved', The Jakarta Post, 27 April 2015, retrieved 05 may 2015, < http://www.thejakartapost.com/news/2015/04/27/forest-moratorium-be-improved.html >

[5] Arnoldo Contreras-Hermosilla & Chip Fay, *Strengthening Forest Management in Indonesia Through Land Tenure Reform: Issues and Framework for Action*, Forest Trends, Washington D.C, 2006, p. 8.

[6] Christopher Barr, Ida Aju Pradnja Resosudarmo, Ahmad Dermawan, John McCarthy, *Decentralization of forest administration in Indonesia: Implications for forest sustainability, economic development and community livelihoods*, Center for International Forestry Research, Bogor, 2006, p.52.

[7] Ibid., p. 53

[8] During a field visit to the district of Wonosobo in Central Java, the Head of the District (Bupati) complained about the removal of the district authority over forest management issues. He explained that every dispute and detail will need to be reported to the provincial capital at a distance of 3 hours by car.

[9] Simon Butt, Traditional land rights before the Indonesian constitutional court, in: 10/1 Law, Environment and Development Journal (2014) p.57, available at <http://www.lead-journal.org/content/14057.pdf>

[10] Ibid., p.14.

[11] Contreras-Hermosilla & Fay, op. cit., p.8.

[12] M. Ajisatria Suleiman, T*ransnational Private Regulations For Sustainable Palm Oil In Indonesia*, State Secretariat for Economic Affairs SECO/World Trade Institute (WTI)`s Academic Partnership, p.15 (no publication date stated in the paper)

[13] There are two categories under this classification: Natural Reserve (Hutan Suaka), and Nature Conservation Area (Hutan Pelestarian Alam). Hutan Suaka, or nature or wildlife reserves, allow scientific research, education and limited tourism activities, whereas Hutan Pelestarian Alam allows the same activities with the addition of cultural and cultivation activities. In this paper, we refer only to the general classification under Hutan Konservasi.

[14] Based on Law 41/1999 on Forestry

[15] Contreras-Hermosilla & Fay, op. cit., p.11.

[16] Anne Rosenbarger, et al., 'How to change legal land use classifications to support sustainable palm oil in Indonesia', *World Resource Institute: Issue Brief*, 2013, p. 4.

[17] Anne Rosenbarger, *et al.*, op. cit., p. 3.

[18] Suleiman, op. cit., p. 14.

[19] These cases have been documented by the National Violence Monitoring Mechanism: <http://www.snpk-indonesia.com/Home/Index?lang=en&randdo=b3888579-2d5e-433f-8220-b0c22f8b1d39&userid=9435715>. See also: Suleiman, op. cit., p. 2.

[20] Contreras-Hermosilla & Fay, op. cit., p.14.

[21] This paper does not provide an analysis of forest concessions (hak pengusahaan hutan, HPH), which have now been replaced by commercial timber utilization permits (Izin Usaha Pemanfaatan Hasil Hutan Kayu, IUPHHK). The analysis would go beyond the scope of this paper, especially when considering that activities allowed under HPH/IUPHHK are only applicable in classified 'Production Forests'. It will need a separate study to analyze the effects of these permits on forest management.

[22] A few insightful examples include: Elinor Ostrom, *Governing the Commons: The Evolution of Institutions for Collective Action*, Cambridge 1990; Carol M. Rose, *Property Rights, Development Imperatives, and Environmental Protection,* Yale Law School, March 2008 (http://www.law.yale.edu/documents/pdf/sela/Rose.pdf); Richard A. Epstein, *Property Rights, State of Nature Theory, and Environmental Protection*, in: Journal of Law & Liberty, New York University (www.law.nyu.edu/sites/default/files/ECM_PRO_061926.pdf, no date provided); Elizabeth Brubaker, *Property Rights: The Key to Environmental Protection*, The Fraser Institute, Fraser Forum May 2007, p. 19-22 (www.fraserinstitute.org/uploadedFiles/fraser-ca/Content/research-news/research/articles/property-rights-key-to-environmental-protection.pdf); Grenville Barnes and Sheryl Quail, *Property rights to carbon in the context of climate change*, University of Florida (siteresources.worldbank.org/INTIE/Resources/Barnes.doc, no date provided)

[23] Hernando De Soto, 'Introduction by Hernando De Soto', *International Property Rights Index*, retrieved 10 March 2014, < http://internationalpropertyrightsindex.org/introduction>

[24] Esther Mwangi, Helen Markelova, Ruth Meinzen-Dick, 'Collective Action and Property Rights for Poverty Reduction', *International Food Policy Research Institute*: Issue Brief, 2012, p.3.

[25] *Mystery of Capital*, video, Becket Films LLC and Institute for Liberty and Democracy Productions, 2009

[26] 'Report: Indonesia', *The International Property Rights Index*, 2014, retrieved on 10 March 2015, <http://internationalpropertyrightsindex.org/country?c=Indonesia>

[27] 'Appendix II: Detailed Methodology and Data Source Information', The International Property Rights Index, 2014, p. 1

[28] Interview with local government officials during a field visit to the district of Wonosobo in April 2015

[29] The petition signed by the village officials was presented to the reseach team during the field visit to Wonosobo district.

[30] Some of these cases will be introduced in the subsequent part of this paper.

[31] Harini Nagendra, 'Drivers of reforestation in human-dominated forests', *PNAS*, September 25, 2007, Vol. 104, No. 39 (http://www.pnas.org/content/104/39/15218.full)

[32] Hemant Ojha, Lauren Persha & Ashwini Chharte, *Community Forestry in Nepal: A Policy Innovation for Local Livelihoods*, International Food Policy Research Institute, 2009, p. 3

[33] Ojha et al., op. cit., p. 9-10.

[34] Ojha et al., op. cit., p.1. Without disclosing the source of its data, another report from 2014 stated that the number has grown to 40% of the population and they are being organized in 18,000 CFUGs <http://pefc.org/news-a-media/general-sfm-news/1687-nepal-s-community-forests-take-a-step-closer-to-certification>

[35] Ojha et al., op. cit., p.13

[36] Ojha et al., op. cit., p.14

[37] Ojha et al., op. cit., p.14

[38] Ojha et al., op. cit., p.17

[39] Krishna P. Acharya, Jagannath Adhikari, Dil R. Khanal, *Forest Tenure Regimes and Their Impact on Livelihoods in Nepal*, Journal of Forest and Livelihood, vol. 7, no. 1, 2008, pg.16.

[40] The story of tree ownership in Niger was popularized in an article by Lydia Polgreen in the New York Times on 11 Feb 2007
http://www.nytimes.com/2007/02/11/world/africa/11niger.html?pagewanted=all&_r=0

[41] *World Development Report 2008*. Agriculture for Development, World Bank, p. 194

[42] Information about the history of tree ownership rights in Niger were taken from Mercedes Stickler, *Rights to Trees and Livelihoods in Niger*, Focus on Land in Africa Brief, August 2012

[43] Stickler, op. cit., p. 5

[44] Usufructuary rights or *hak pakai hasil* in Indonesian are defined as the "right of an individual to use the property of another, cared to the best of the individual's ability ". (http://www.jurnalhukum.com/hak-pakai-hasil-vruchtgebruik/) Usufructuary rights are limited property rights because they include the right to control and benefit from property but not to transfer property.

[45] During field visits of an international research team to four villages in Niger, villagers stated clearly that trees are the only valuable wealth they have. The team concluded that "as far as the common sensitiveness to trees protection is concerned, the main measures outlined by the forestry policy in Niger fall into a context already governed by largely shared pro-environmental beliefs marked by self-regulation". Yatich T., Antoine Kalinganire, John C. Weber, Koffi Alinon, Joseph M. Dakouo, Ouodiouma Samaké, Sékouba Sangaré, How do forestry codes affect access, use and management of protected indigenous tree species: evidence from West African Sahel, World Agroforestry Centre, 2014, p. 39-41

[46] The spread of FMNR in Niger, http://fmnrhub.com.au/projects/niger/#.VW1xpFyqqko

[47] A study reported by the end of 2007 that community forestry had been implemented in the six districts of West Lampung, North Lampung and Tanggamus in Lampung province, Gunung Kidul and Kulon Progo in Yogyakarta, and Central Lombok in West Nusa Tenggara province. Compared to the others, Gunung Kidul was small in dimension (1,150 ha) but had by far the highest number of participating households (3,583). See: Masahiko Ota, Implementation of the Community Forest (*Hutan Kemasyarakatan*) scheme and its effects on rural households in Gunungkidual district, Java, Indonesia: an exploration of the local agrarian context, in: Tropics Vol. 19 (3), 30 June 2011

[48] Takahiro Fujiwara, San A. Awang, Wahyu T. Widayanti, *et al., Overcoming Vulnerability of Privately Owned Small-Scale Forest Through Collective Management Unit Establishment: A Case Study of Gunung Kidul District, Yogyakarta in Indonesia*, International Jounral of Social Forestry, 2001, p.131.

[49] Taken from a working paper by Dede Rohadi, Maarit Kallio, Haruni Krisnawati &Philip Manali titled "Economic incentives and household perceptions on smallholder timber plantations: Lessons from case studies in Indonesia" for the T*aking Stock of Smallholder and Community Forestry: Where Do We Go From Here?* Event by CIFOR in Montpellier, France; 24-26 March 2010.

[50] Fujiwara, *et al*, op. cit. p 130.

[51] The Samdhana Institute, 01 December 2014, retrieved 04 June 2015 https://samdhanainstitute.wordpress.com/2014/12/01/pembelajaran-mengelola-hutan-dari-kulonprogo/

[52] Agus Prijono, 'Jejak Hutan di Tanah Rakyat', *National Geographic*, March 2014, 35.

[53] Fujiwara, et al, op.cit., pg.131. The financial analysis of a community-based plantation forest in Lampung province, conducted between July 2011 and December 2013, also came to the conclusion that the business there is feasible. See: Tuti Herawati, Economic Study and Standard Price of Community-Based Plantation Forest (HTR) Products. Case Study in Lampung Province, 2013

[54] UNESCO, World Heritage List, Kinabalu Park, http://whc.unesco.org/en/list/1012

[55] Hong Ching Goh, Influence of park governance on tourism development in Kinabalu Park, Malaysia Borneo, in: O. Ozcevik, C.A. Brebbia, S.M. Sener (eds.), Sustainable Development and Planning VII, Southampton 2015, p. 934-936. After the creation of a local Mountain Guide Association in 2011, Goh describes the management as a "park-public-private-people model".

[56] This encroachment by local communities has been observed as a threat worldwide. See also: Hezron Mogaka, Gacheke Simons, Jane Turpie, Lucy Emerton and Frqncis Karanja, Economic Aspects of Community Involvement in Sustainable Forest Management in Eastern and Southern Africa, The World Conservation Union, 2001, p. 65

[57] Hong Ching Goh, Sustainable tourism and the influence of privatization in protected area management. A case of Kinabalu Park, Malaysia, PhD dissertation, University of Bonn, 2007 <http://www.academia.edu/3231213/Sustainable_tourism_and_privatization_in_the_case_of_Kinabalu_Park_Borneo>

[58] Ibid.

[59] Op. cit., p. 26

[60] UNESCO, World Heritage List, Kinabalu Park, <http://whc.unesco.org/en/list/1012>

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CIPS appreciates the generous grant given by the Southeast Asia Network for Development (SEANET) to write this policy paper.