

Commodification of Natural Resources and Forest Ecosystem Services: Examining implications for forest protection

Summary

Through the commodification of nature, the framing of the environment as a ‘natural resource’, or ‘ecosystem service’ has become increasingly prominent in international environmental governance. The economic capture approach is promoted by international organizations such as the United Nations Environmental Program (UNEP) through Reducing Emissions from Deforestation and Forest Degradation (REDD); Payments for Ecosystem Services (PES); and The Economics of Ecosystems and Biodiversity (TEEB). This paper will inquire how forest protection is related to issues of social and ecological justice, exploring whether forest exploitation based on the top-down managerial model fosters an inequitable distribution of resources. Both top-down and community-based approaches to forest protection will be critically examined and a more inclusive ethical framework to forest protection will be offered. The findings of this examination indicate the need for a renewed focus on existing examples of good practice in addressing both social and ecological need, as well as the necessity to address the less comfortable questions where compromise appears less possible. The conclusion argues for the need to consider ecological justice as an important aspect of a more socially-oriented environmental justice for forest protection.

Keywords: agroforestry; commodification; community-based conservation (CBC); ecological justice; ecosystem services; PES; REDD; TEEB

Introduction

The framing of the environment as a ‘common good’, regulating of nature-based industries and environmental services has become increasingly common in international environmental governance, supported by financial institutions such as the World Bank (e.g. Caine 2013). In this framing, forest protection and community rights are seen as externalities that can be mitigated through economic measures (e.g. Shoreman-Ouimet and Kopnina 2016). These measures stimulate a convergence of capitalist expansion and environmental protection within the so-called neoliberal conservation through top-down environmental governance (e.g. Brosius 1999; Brockington 2002; Büscher and Fletcher 2014; Duffy et al 2015). Igoe and Brockington (2007) discuss “hybrid environmental governance” in which governments, the private sector, NGOs and communities share responsibility for and profits from

conservation, and institute new types of territorialization: the partitioning of resources and landscapes in ways that control local people through regulation by national and transnational elites.

The economic cost-benefit worldview is promoted by international organizations such as United Nations Environmental Program (UNEP) through Payments for Ecosystem Services (PES); Reducing Emissions from Deforestation and Forest Degradation (REDD); and The Economics of Ecosystems and Biodiversity (TEEB). According to Neef (2015), ecosystem services refer to functions such as carbon sequestration, ecotourism, promotion of sustainable agriculture and forestry, erosion and flood control, clean drinking water, or nature recreation. PES is built upon two premises: that ecosystem services have quantifiable economic value and that this value can be used to entice investment in restoration and maintenance, combined to manage environmental externalities (e.g. UNEP 2008; Hiedanpaa and Bromley 2014). REDD seeks to create a financial value for the carbon stored in forests, offering incentives for developing countries to reduce emissions from forested lands. REDD includes the role of conservation, sustainable management of forests and enhancement of forest carbon stocks (UN-REDD 2015). TEEB is a global initiative focused on mainstreaming the values of biodiversity and ecosystem services into decision-making at all levels (TEEB 2010).

Commodification or putting a price on nature in the form of species banking and conservation finance is supported as a core strategy to solve a whole range of environmental problems, ranging from climate change to deforestation (e.g. Poiani et al 2011; Engel et al 2013; Harvey et al 2013). Commodification is believed to avoid the tragedy of the commons by privatizing certain resources, and viewed as a strategic tool to communicate the value of biodiversity using a language that reflects dominant political and economic views (Daily et al 2009), thus making environmental protection both legitimate and efficient as it is centrally enforced.

Despite this assessment, commodification is often seen as disadvantaging the local communities as they rarely derive profit from natural commodities (e.g. [German et al 2010](#); Klooster 2010; Büscher and Fletcher 2014; Duffy et al 2015). This critique emerged partially in response to the realization of the failure of structural adjustment programs in developing countries leading to financial dependency (e.g. Easterly 2006) and partially in response to the general mistrust of top-down institutions that profit from neoliberal conservation of forests (e.g. Escobar 1996; 2006; Li 2007). The overarching criticism of neoliberal conservation is linked to the suspicion of open market neoliberalism and its advocacy of privatization, deregulation, and scaling down of state government as an attempt to control and profit from the resources at the expense of vulnerable communities (e.g. Milne and Adams 2012; Quan et al 2014).

Generally, the critics are concerned with social justice, or environmental justice in regard to equitable distribution of environmental risks (such as pollution) and benefits (such as natural resources) between nations and across generations (e.g. Guha and Alier 2013). Anthropologists, political ecologists, human ecologists, and historical ecologists have argued that human-environment interactions are characterized by changing, fluctuating relationships in which humans have always shaped natural systems (e.g. Balee 1994; Igoe and Brockington 2007; Milne and Adams 2012). Thus, the exclusion of its human inhabitants through a 'fortress conservation' model of strict protection based on top-down policies is neither practical nor ethically justifiable (e.g. Brockington 2002).

To counteract this tendency, community-based conservation (CBC) was proposed. Advocated by a number of international non-governmental organizations and human rights advocacy groups such as Just Conservation or Survival International, there has been a widespread shift from the more top-down models of forest management towards a more participatory co-management. Greater community participation in the management of natural resources is believed to achieve multiple aims, from reducing opportunities for corruption and thus guaranteeing greater profitability of forest resources to satisfy social equality aims and empowering the local communities as well as reducing poverty (e.g. Milne and Adams 2012). CBC has been proven in some cases to increase broad support for policy outcomes (Ban et al. 2013), ensure compliance with rules and regulations (Sutton and Tobin 2009), foster greater trust in scientific expertise (Brown 2009), and provide income for local peoples in developing countries, in the hope that they come to value the areas and the native species that lie within them (Sinclair 2015). CBC has also been linked to small-scale traditional agriculture and perceptions of it as environmentally benign (e.g. Lansing 1991; [Schroth and Harvey 2007](#)).

A widespread shift from the top-down models of forest management towards more participatory forms of co-management has coincided with calls to return to traditional agroforestry, including small-scale slash-and-burn, and swidden agriculture, and to turn away from authoritative governance (e.g. Henley 2011). In the context of a discussion of protected areas and traditional activities, it was argued that small scale farming is ecologically benign, in some cases actually contributing to the local-level conservation (Lansing 1991), for example when both cocoa farmers leave a substantial amount of original trees and plants ([Schroth and Harvey 2007](#)).

However, CBC was also criticized as its implementation has not always yielded successful policies. CBC was noted to be short-sighted, marred by elite capture, corruption, and mismanagement (Temudo 2012). For example, due to corruption, CBC programs in Africa often benefit local authorities or elites but not

individuals in the community (Sinclair 2015:77). As the number of people increases in the region, a demand to increase the harvest also increases but the wildlife in a set area does not tend to increase. Thus, a steady harvest means that each person now receives a declining income, while people expect an increasing income so that the demand for increasing harvest is exacerbated. Typically, the areas set aside for CBC decline over time due to expanding populations, increase in development, and loss of soil so that the wildlife population decreases (Sponsel 2014). For these reasons CBC areas often become unsustainable in the long term.

While the critique of commodification as disadvantaging local communities is well-established, forest protection is rarely discussed in terms of ecological justice, or justice between species (Baxter 2005). Scholars concerned with ecological justice have pointed out that rendering environment solely as an entity instrumental to human well-being ignores its non-utilitarian value (e.g. Crist 2012; Cafaro and Primack 2014; Miller et al 2014; Terborgh 2015). Sinclair (2015:77) emphasizes that CBC favors only those species that are useful to humans, while other species, such as large carnivores, are often excluded and even persecuted. In addressing the areas of tension between supporters and opponents of social and/or ecological justice in relation to forest protection, this paper will reflect on the market-based instruments examining both top-down and CBC approaches and offer a reconciliatory vision of sustainable use of forests.

This paper is structured as follows. It first examines neoliberal forest conservation and existing schemes to protect forests reflecting on both the opportunities and pitfalls of market-based instruments. A broader discussion of the advantages and disadvantages of resource management follows. A section on CBC and farming then reflect on the trade-offs involved in traditional forest exploitation systems. It concludes in analyzing top-down and community-based initiatives from the social and ecological justice points of view.

Neoliberal forest protection

A number of international initiatives linking forest certification with PES have emerged. By the early 1990s, the Rainforest Alliance began their 'SmartWood' certification; and later the Forest Stewardship Council (FSC) certification emerged (e.g. Klooster 2010). Shortly after the turn of the millennium, Forest Law Enforcement and Governance and Trade (FLEGT) aimed to mobilize international commitment from governments that profit from forest conservation to increase efforts to combat illegal logging and corruption (The World Bank 2013). FLEGT included voluntary partnership agreements between countries

in order to ensure that only legal timber could be traded as part of the larger effort to provide timber certification ([Brown et al. 2008](#)). One such initiative is Forest Certification for Ecosystem Services (ForCES) in Indonesia, where PES was extended in FSC certification, with more than 1 million hectares of forest attaining FSC certification (FSC).

Similar PES deals have been emerging wherever corporate partners, public-sector agencies, and non-profit organizations have taken an active interest in a new source of income for land management, restoration, conservation, and sustainable use activities, purportedly aimed to simultaneously contribute to economic development and reduce the rate of biodiversity loss (UNEP 2008). PES allows users who benefit from a certain ecosystem service to pay those who have to sacrifice their own resources to maintain such services. One of the central ideas is that ‘resource management’, both in the original (old-growth) forests and land cleared for agricultural development, is contingent on profitable exploitation of ecological services, for which providers (i.e. farmers and other landowners) are compensated (Neef 2015).

Gómez-Baggethun and Ruiz-Pérez (2011:6) have argued that ecosystems services can be classified into two main approaches. The first approach involves interventions through state taxes and subsidies. The second approach is through private transactions, often in markets where ecosystem services can be freely sold and bought. These approaches have been implemented via two main mechanisms: ‘markets for ecosystem services’ and PES. “Thus the ‘polluter pays principle’ which underlies the former is complemented by the ‘steward earns principle’ which underlies the latter” (*Gómez-Baggethun and Ruiz-Pérez* 2011). According to Jax et al (2013), a major strength of the ecosystem services concept is that it allows a succinct description of how human well-being depends on nature, showing that the neglect of this dependency has negative consequences for human well-being and the economy.

Similar to PES, identifying and managing optimal areas and strategies of forest conservation has been integral to REDD. REDD supports those strategies that prevent deforestation by putting a price on the carbon produced by the forest – one of the key strategies for addressing global greenhouse emissions that cause climate change (UN-REDD). REDD attempts to financially motivate sustainable agriculture and use systems that provide food security and resilience, all linked to “climate-smart agriculture” (Harvey et al. 2013).

Despite the rhetoric of sustainable development that tends to underlie the congruity of social, economic and ecological objectives (Brundtland report, WCED 1987) the impacts of top-down forest management

have not always been harmonious or balanced. According to critics, certification agencies, for example, have normalized the idea of 'sustainable forestry', debating that any commercially used plantations can be environmentally benign because they are normally planted where original forest stood (Brosius 1999). *Gómez-Baggethun and Ruiz-Pérez* (2011) have argued that economic valuation is potentially counterproductive for biodiversity conservation and equity of access to ecosystem services benefits.

Besides, timber verification schemes are difficult to implement and have had limited success ([Brown et al. 2008](#)). Hiedanpaa and Bromley (2014) argue that PES schemes face a daunting challenge if they are to bring about sustainable practices and have yet to empirically demonstrate their efficacy and financial sustainability. Until now, the critics described conservation as a (global) subsidy system, which redistributes resources under the assurance that this is "short-term support for the effort to generate self-sustaining markets" (Büscher and Fletcher 2014: 20).

Particularly in anthropology, the critique of 'neo-colonial' or 'elitist' approaches to conservation in general and to forest management, in particular, has become prominent (Brockington 2002; Igoe and Brockington 2007; Bose et al 2012; West and Brockington 2012). Some of these critics argue against climate change mitigation through REDD, referring to them as a 'menace' imposed by the corporate or political elites on disadvantaged communities (Beymer-Farris and Bassett 2012).

Critique of forest conservation as a commodity also draws attention to power relations and the politics of resistance as one of the key practices in contemporary community forestry (Li 2007). Escobar's (1996) exploration of the link between neo-colonialism and contemporary institutionalization of conservation includes the role of economic inequality and trade policy and conflicts over natural resources in response to neo-liberal globalization. There is a broader process of making populations and landscapes in the developing world continuously subordinated to neoliberalism, allowing the localities and populations to be operationalized, managed, and exploited more effectively (Escobar 1996). Through the three inter-related rubrics of economic, ecological, and cultural, including global trade networks, many post-colonial nature reserves have been said to retain the top-down status of a protected area with rights of community access heavily curtailed (e.g. Escobar 2006; Igoe and Brockington 2007).

Debating corruption and illegality

The top-down governance was criticized for re-enforcing unequal power relations between those that own the resources (large international organizations, local government officials) and marginal communities

(local people, small farmers, etc.), rendering certain traditional practices corrupt or illegal (Brockington 2002; Büscher and Fletcher 2014). Some have even argued that criminalizing practices like poaching are counterproductive (e.g. Duffy et al. 2015) or exaggerated by ‘hysterical’ environmentalists (Bücher 2015).

It has been argued that the real ‘crime’ is not committed by local communities but by large agricultural projects set up by international organizations that results in industrial logging causing far greater devastation than the small-scale farming driven by poverty and despair as well as corruption (e.g. [German et al 2010](#); Klooster 2010; Milne and Adams 2012). In the case of forest conservation, one concern is what is meant by corruption.

In Nigeria, many cocoa and plantain farms are indeed ‘illegal’, with the plantain farms (largely unknown by higher up forest officers) transporting thousands of tons of plantain to Lagos every week (Von Hellermann 2016). The fact that these plantations provide a livelihood for the small scale farmers and traders is seen as a moderating factor since illegal plantations enable marginal communities to reap some benefits from the much larger profit-seeking activities (Von Hellermann 2016).

Communities and forests: ethical disputes

For REDD in Mozambique, the difficulties of linking mitigation objectives through tree planting, conservation and carbon trading with the promotion of sustainable livelihoods and climate adaptation, pointing to the different coalitions with conflicting agendas (Quan et al. 2014). These agendas range from private control of forests linked to external carbon markets to national non-governmental organizations (NGOs) that reject REDD as a means to alleviate poverty.

This is where the critique of both top-down (neoliberal governance) and bottom-up (CBD) forest conservation bifurcates. One group of scholars, among whom anthropologists, political ecologists, human ecologists, those supporting economic development, human and indigenous rights, and social justice criticize commodification as a process that dispossesses local communities. Another group, mostly conservationists, ecologists, biologists, and ecologically inclined social scientists point out that commodification essentially serves anthropocentric interests. This division becomes particularly salient in the context of protected areas, where proponents of social justice argue that local communities are disadvantaged by their creation (Brockington 2002; Igoe and Brockington 2007; Bose et al 2012; West and Brockington 2012; Duffy et al 2015). Favoring conservation that was not intended to be for the

benefit of the people has even deserved a label of misanthropy (Kareiva and Marvier 2007; Marvier 2014; Büscher 2015).

In contrast, supporters of strict conservation measures have argued that even partial human use of the fragile forest habitats is likely to exacerbate the biodiversity crisis and thus further disadvantage vulnerable communities whose livelihood depends on that biodiversity (e.g. Miller et al. 2014; Sinclair 2014; Doak et al. 2015). In this way, it is not so much the anthropocentrism but ‘industrocentrism’ or capitalist development that disadvantages both human and non-human interests (Kidner 2014).

While resource management brings much-needed funding into the realm of conservation, PES is criticized for subsuming biological diversity under a homogenous category of carbon credits, reducing complex natural and social phenomena in tradable commodities and ignoring the inherent value of non-human species (e.g. Vucetich et al 2015). The underlying critique of commodification is that it is ‘time to recognize that nature is the largest company on Earth working for the benefit of 100 percent of humankind – and it’s doing it for free’ (Sullivan 2009: 2).

At present, however, as Vira (2015:763) has noted, for many, the industrial development logic demands to maintain stable economic growth, and redistributing the benefits to ensure wider prosperity, appear to have the highest priority and unconnected to sustainability concerns, especially in cases related to protection of rare and endangered species. Thus, the position of ecological justice (Baxter 2005), and the intrinsic value of nature becomes secondary to social and economic distribution issues.

The question of the efficacy of forest protection

The evidence for the efficacy of top-down management approaches as well as CBC in achieving both social justice and forest protection has been mixed (e.g. Temudo 2012; Hiedanpaa and Bromley 2014; Sinclair 2015). Some anthropologists have argued that indigenous populations employed their traditional ecological knowledge (TEK) and often manage their environments well, as exemplified by case studies of agroecology (e.g. Anderson 2012). Agroecology, which studies the entire human food system from production and processing to nutrition, has recently emphasized traditional production systems as inherently sustainable and able to provide nutrition to the most vulnerable social groups, guaranteeing food security and other indirect benefits of income generation, nutrition, and ecosystem services ([Hoffman 2013](#)).

However, historically agroforestry was created and maintained by institutions radically different from today's global capitalist system. Attention to today's global institutions, including REDD, PES, or TEEB, makes it hard to imagine alternative forms of production which would have to accompany post-industrial agro-ecosystems (Fraser et al. 2015). Forest protection combined with supposedly benign types of traditional swidden farming has been criticized as a romantic ideal, obscuring the fundamental incompatibility of agriculture with nature conservation (Henley 2011). Local participation and traditional activities, including small scale farming, have proven to be less clearly ecologically harmless or socially equitable than previously thought (Henley 2011). The idealized community (Mehta et al. 2001) is similar to the much-criticized idea of the 'noble savage' (e.g. Sivaramakrishnan 1999). Indigenous people are not necessarily the best custodians of their land, as exemplified by the "myth of indigenous stewardship" (Fennell 2008). Even at the small scale, when used too often and too intensely by an increasing number of people, soil tends to degrade (Sinclair 2014). Indigenous societies may have once lived in a state of ecological equilibrium with the environment, but such a state may now be disrupted (Sponsel 2014). According to Balee (1994: 116), disequilibrium with the environment typically manifests itself in high population densities, dependence on global market economies, fossil fuel-based technologies, reduction in exposure to the natural environment and a huge negative effect on biological diversity. Even if the ecological impact of indigenous cultures was often low, this was not necessarily because of their inherent natural wisdom, but because of low population density and the absence of a market and poor technology (Fennell 2008).

Accommodation of the growing human population and the expansion of often illegally appropriated agricultural lands have resulted in a further escalation of biodiversity crisis (Sinclair 2015). Many formerly 'traditional' communities that live in proximity to protected areas have reached populations exceeding the carrying capacity of their natural environment, unintentionally depleting resources (Sponsel 2014). Today, agricultural development exists where indigenous laws would previously have prohibited them, for example, close to rivers or on steep hillsides: all places prone to erosion and less likely to be resilient (Shoreman-Ouimet and Kopnina 2016). Tropical forest soils' nutrient-holding capacity is limited, and when cleared, the thin layer of fertile top-soil washes away, causing the area to be more vulnerable to fires, and making it very difficult for native flora and fauna to become re-established afterward (Henley 2011). Multiple instances of over-hunting and habitat destruction in community-managed regions have demonstrated that in some instances, fortress conservation-type protection is more successful than 'permissive' conservation or CBC (e.g. Sinclair 2014; Doak et al 2015).

Both industrial agricultural projects and small-scale top-down methods of management can have

devastating effects on the environment. In order to understand the complex relationship between the exploitation of the forest and environmental degradation, a more nuanced understanding of agencies and actors that harm forest and benefit from forest protection is required. As Crist (2012: 145) has argued, the planet-wide abuse of the environment is driven by the Faustian economic partnerships and the life-ways of both the world's rich and poor.

While traditional agroforestry seems to strike a compromise between top-down and local-level control of resources, agroforestry is not without its critics. Agroforestry is often supported by regimes instituted by REDD, PES, and TEEB, still setting a clear political agenda of protecting forests as property, promoting the participation of civil society and the private sector (Von Hellerman 2016). Because the forest is treated as property, the marginalized communities are officially 'allowed' to reap its benefits by paternalistic and neocolonial landowners who continue to profit from it (Von Hellerman 2016).

In the ethnography of the Gimi-speaking peoples in Papua New Guinea, the congruity of market valuation with indigenous notions has been questioned (West 2006). The integrated conservation and development project attempting to tie a local valuation of nature to economic markets through the creation of 'eco-enterprises' failed to consider the Gimi worldview and practice (West 2006). Based on ethnographic material, the Gimi understand their forests to be part of a series of dialectical relationships rather than commodities, complicating neoliberal conservation efforts (West 2006).

Another complication in relationships between local governments, communities and conservation organizations exists in the context of conservation of the Malaysian rain forest, where a number of pitfalls occur in alliances between NGOs and local people, as well as between grassroots and Western environmentalists (Brosius 1999). The indigenous protest movement in Malaysia teamed up with environmentalists to fight a common cause, but this alliance eventually fell apart because they had ultimately incompatible agendas (Brosius 1999).

There is a remarkable convergence between a diverse range of actors and voices supporting the principles of good governance in forest conservation, including the development economists, the NGOs, and human rights activists (Von Hellerman 2016). These historically adversarial groups all largely agree that it is the underlying causes of deforestation that need to be tackled and that local people should have more control over their own resources. In this sense, everyone speaks more or less the same language of participation, accountability, transparency, and sustainability and against corruption, the last allowing both illegal logging and poaching.

Disputing corruption

While obstacles to forest protection and successful conservation have been identified, and corruption has been singled out as one of the key areas of concern, a counter-reaction to combatting corruption came from the same ‘camp’ of human rights defenders. Far from considering this an impediment to forest protection, some social scientists have argued that corruption and even illegal poaching should be seen through a cultural interpretative lens. Instead of evoking a ‘culture of corruption’ ([Smith 2007](#)), they called for a more nuanced, differentiated, and sector-specific understanding of corruption (Fortmann 2005). In Benin, Von Hellermann (2016) notes that logging allocations are strengthened by the regular exchange of greeting cards and calendars, prominently displayed in offices of loggers and forest staff alike, as well as the less overt but even more important flow of ‘gifts’ from loggers to forest staff, and the allocations are generally shaped by and an integral part of patrimonial relations. Fortmann (2005) argues that the assumptions that African officials are corrupt are often informed by underlying dismissive attitudes that warn against putting natural resources, especially wild animals under village control. In fact, it was argued that categories such as illegality, corruption, and poaching are constructed by the ruling elites (Buscher 2015) and criminalizing poaching militarises conservation (Duffy 2014). There are some ethical issues with this approach.

There is a danger in excusing activities that lead to environmental degradation on the grounds of social justice, and in conflating neo-colonial practices, which are indeed ethically problematic, and any strict policies of forest protection (Shoreman-Ouimet and Kopnina 2015). By criticizing all types of forest policies designed for biodiversity conservation, those that oppose criminalizing poaching might be overlooking the existential threat to forests' non-human inhabitants. In equating wild animals with natural resources, Fortmann (2005) and other critics of strict conservation, in fact, replicate anthropocentric instrumental attitude toward nature of the very neoliberal elites they profess to criticize.

Revisiting ecological justice

While the criticism of top-down approaches to conservation as disadvantaging the marginal communities is well-placed in some cases, the ethical judgment that condemns conservation is often hinged upon robust anthropocentric bias (Kopnina 2012, 2016a, 2016b). The insistence on the moral primacy of social equality leaves open the question of the non-instrumental value of biodiversity (Vucetich et al 2015). Some points of the social justice critique are very pertinent to the aim of successful biodiversity conservation, namely the need to understand contemporary practices in a historical context. Yet, other

points can lead to ecological myopia and ethical double-standards. Vayda and Walters (1999) argue that human ecologists and political ecologists often refuse to privilege the ecological over the political or economic forces exposing a typical storyline of capitalist forces usurping control of local resources. This storyline avoids the discussion of responsibility for interspecies genocide (Cafaro 2015). This requires a different moral sensitivity, without which, the 'cultural interpretation' of poaching excuses severe violations of nature in the name of social justice. The proponents of exclusive social justice do not perceive the disappearance of old growth forests and the termination of multiple species as problematic as long as the people themselves are not harmed (Cafaro and Primack 2014). Instead, strictly protected areas take the fall for the purported moral aim of social equality, while exploitation of nature remains unchallenged (Crist 2015:93).

While the destructive reach of the large landowners and corporations is certainly globally profound, the local people cause deforestation by clearing forest for subsistence agriculture and fuel or hunting for 'bushmeat' (wild animals), leading to the 'empty forest syndrome' (Peterson 2013). Conservation that restores depleted habitats can help break the vicious spiral in which the poor are forced to overuse natural resources, which in turn further impoverishes them (Elliott 2013).

In fact, biodiversity conservation and poverty alleviation have been demonstrated to go hand in hand. As an example, the prominent primatologist Jane Goodall (2015:23-24) reports on the activities of the Roots & Shoots program she has helped founding over a decade ago in Tanzania. The program has started with selecting a team of local villagers to discuss their needs and priorities, which included increased food production. This need was addressed through the restoration of fertility to the overused farmland without the use of chemical fertilizers. Roots & Shoots has encouraged the establishment of wood lots close to the villages and enables villagers to acquire fuel-efficient stoves and build more hygienic toilets. Another expressed set of needs was for improved financial security, health provision and better access to education. In response, the program initiated micro-credit programs for environmentally sustainable projects of the people's own choice, which included tree nurseries. In response to the need for better education, Roots & Shoots has provided scholarships for girls to stay in school. Addressing health concerns, as far as population pressures, Roots & Shoots has trained volunteers who provide family planning information. These types of actions have led to positive community responses and volunteer action, the villagers agreed to set aside a buffer zone, a designated village forest reserve, surrounding Gombe National Park. Within this forest regeneration zone, no hunting or tree felling is allowed, although limited access is granted for foraging for medicinal plants and mushrooms, beekeeping, and dead wood collection. Simultaneously, the forest reserve protects the clean water supply to the villages. Over the past ten years,

the trees have reached heights of over 20 feet allowing the chimpanzees and other animals considerable freedom of movement (Goodall 2015:23). It is this type of program that illustrates the possibility of combining ecological and social objectives. Yet, such successful programs are rarely discussed by conservation critics.

Even less discussed is the forest protection for the sake of non-humans which is at present of low priority in policy agendas (e.g. Miller et al 2014; Sinclair 2014). The discussion of forest protection beyond the immediate social and economic agendas has apparently erased consideration of the intrinsic value of nature beyond its utility (Doak et al 2015). A focus on prudent forest use for people may serve to justify the destruction of non-human forest inhabitants that hold little or no economic or nutritional value to humans (Cafaro 2015).

Ways forward: combining CBC and market-based instruments

Where both ecological and environmental (meaning, social equality) ‘camps’ coincide in their assessment is their critique of the commodification of nature. In attributing causes of ecological degradation to consumption and land acquisition practices associated with the consolidation of wealth and growing inequity globally, the critics are observing that commodification is not only impermissible in terms of social and economic justice, it is also detrimental to environmental purposes (Sullivan 2009).

Both social and ecological justice supporters have been at pains to work with and support conservation activities and organizations, in part by highlighting the detrimental ecological outcomes of social injustices in conservation contexts (Duffy et al 2013; Shoreman-Ouimet and Kopnina 2015; Sullivan 2015). The continuing dichotomization of social and ecological justice, both intellectually and politically, may serve as the most pressing barrier to progressive change that serves multispecies flourishing (Sullivan 2015). Critical social scientists who are highlighting the social and ecological inconsistencies associated with conservation alliances, point out that policies and practices that entrench economic inequality require globally costly consumption practices (such as tourism and trophy hunting to generate conservation revenue), seem to amplify rather than shift this barrier (Sullivan 2015).

Yet, ecological justice should not come as an after-thought after social and economic justice are fully addressed (as they might never be), and not considered as subordinate to anthropocentric interests (Kopnina 2012). The instrumental view of the environment is akin to the dominant rhetoric of sustainable development, which centers on social equality and economic equity across human (*sic*) generations (WCED 1987). This anthropocentric view in relation to both top-down and CBC approaches renders the

loss of biodiversity as inconsequential as long as the "ecosystem services" that benefit humanity remain intact (Cafaro and Primack 2014). Many species are unlikely to have an economic value, and their extinction is unlikely to affect ecosystem services (Vucetich et al 2015).

Instead, many contend that ecological justice needs to be served simultaneously and in equal measure with social justice (Crist 2012; Crist and Kopnina 2014; Shoreman-Ouimet and Kopnina 2015; 2016; Strang 2016). This requires a change in regarding human groups as the only beneficiaries of exploitation of nature but also recognition of the value of the forest in which extinction is a great moral wrong (Cafaro and Primack 2014). Otherwise, the prevailing assumption of human entitlement to the benefits of nature aids conversion of the last remaining wilderness and traditional ways of living into "resources", masked by the high moral grounds of serving justice (Crist 2015:93).

In this context, research in which forests and agroforestry systems can be managed as food provisioning systems' presents forest as nothing more than an exclusive feeding lot for one species only. The ways forward include a reconciliation of social and ecological objectives that emphasize – and hopefully fairly weigh – costs and benefits of forest conservation and synergies between human and nature interests (Strang 2016). In ideal, one does not need to sacrifice nature to benefit people; rather, people benefit from a nature that is conserved (Rolston 2016:279). Such synergies have the potential to engender a more helpful and 'allied' conversation about issues critical for both social and ecological justice. It is also crucial to recognize that such reconciliation should not support the 'business as usual' scenario, which hides strong economic agendas behind the rhetoric of sustainable development and the need to find necessary balance while continuing exploitation.

Yet, reconciliation will not always be easy. The problem is that in some cases synergies may either not be possible or will lead to bad compromises. We yet have to develop an ethical framework for dealing with situations in which hard decisions need to be made. We need to have an open discussion – both at the public (involving local communities as key actors) as well as political (involving the power-holders' and policy) levels - about how to weigh social justice against ecological justice. Yet another stakeholder in this debate is ourselves, academics, who could start by laying bare our own biases and ideas of what justice entails.

More points of conversion need to be developed between proponents of ecological and social justice (e.g. Shoreman-Ouimet and Kopnina 2015), and between the use of landscapes that is truly sustainable in the long term. Practically, this requires the creation of more wildlife refuge areas and wildlife corridors

ensuring ecological connectivity (e.g. Poiani et al 2011; Sinclair 2015) as well as rewilding (e.g. Crist 2015; Shoreman-Ouimet and Kopnina 2016). The more ecocentric framework of forest protection promises to provide long-term benefits to both human and non-human inhabitants of the forest, necessitating further exploration of what forms of governance or food production systems are more effective in preserving natural resources for future generations of both humans and non-humans.

Conclusion

Forest protection is currently premised on the process of commodification, dependent on the top-down control, contingent with profitable exploitation of ecological services, such as carbon sequestration, and erosion and flood control. Good governance needed to protect forests as food resources, necessarily require the types of regimes instituted by REDD, PES, and TEEB, but scrutiny of these is necessitated by concerns about social justice as well ecological justice which sees the exploitation of the forest exclusively as a resource for human benefit as anthropocentric. Scholars that support social or ecological justice, or both, object to the economic capture approach because it promotes social injustice or imbalance of power and demotes nature and non-human species to commodities.

This paper critically examined both top-down and CBC approaches to forest protection and offers alternative ways forward. Further research is needed of PES, REDD, TEEB, considering that evidence is somewhat mixed and contradictory. Ethical tension also needs to be addressed between, on the one hand, the question of control and benefit of forest exploitation by socially and economically powerful and marginal groups; and on the other hand between human and ecological interests. Forests can also be providers of food for the most vulnerable groups, yet this should not be the only reason for protecting the forests. The forests themselves, food security for all species within the forests, and macro-level drivers of unsustainability, namely local demographic change, and potential subordination of forest protection by profit-driven exploitation, needs also to be taken into consideration.

The possibility that a global subsidy system for forest protection, or creation of self-sustaining local markets initiated by powerful mechanisms such as REDD, TEEB, and PES, might, in fact, lead to systems that can more efficiently protect biodiversity both for human benefit and for the forests' intrinsic value (Shoreman-Ouimet and Kopnina 2016). Such a system could provide a livelihood for both human and non-human species in the long term.

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