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Forest plantations and climate change discourses: New powers of 'green' grabbing in Cambodia

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ABSTRACT

Efforts to combat global climate change through forestry plantations designed to sequester carbon and promote sustainable development are on the rise. This paper analyses the trajectory of Cambodia´s first large-scale reforestation project awarded within the context of climate change mitigation. The 34,007 ha concession was formally conceived to promote sustainable resource use, livelihood improvements and emission reduction. On the ground, however, vast tracks of diverse forest landscapes are being cleared and converted to acacia monocultures, existing timber stocks are logged for market sale, and customary land users dispossessed from land and forest resources. While the project adds to an ongoing land grab crisis in Cambodia, we argue that the explicit environmental ends of the forestry concession enabled a 'green grab' that not only exceeds the scale of land grabs caused by conventional economic land concessions, but surprisingly also exacerbates forest logging and biodiversity loss in the area. This case demonstrates the extent to which current climate change discourses, forestry agendas and their underlying assumptions require critical revision in global policy discussions to forestall the growing problem of green grabbing in land use.

1. Introduction

Sustainable forest stewardship is an important part of global climate change mitigation policy. The United Nations Framework Convention on Climate Change (UNFCCC) has supported forestry-based emission reduction through two well-known policy frameworks: Reduction of Emissions from Deforestation and Forest Degradation (REDD+) (Pistorius, 2012), designed to keep existing forests standing, and Afforestation and Reforestation (A/R) projects under the Clean Development Mechanisms (CDM) that promote the expansion of forest area through forestry plantations on non-forested or degraded forest land (UNFCCC, 2013). The 2015 Paris Agreement of the 21st Conference of Parties (COP) relies heavily on removing carbon emissions from the atmosphere at a later date, which may further incentivize forestry projects for carbon capture. Large-scale tree plantations are, however, riddled with problems.

In the past, difficult financial and administrative issues made tree plantations the least attractive type of Clean Development Mechanisms (Thomas et al., 2010). Where they have been established, they frequently spark concerns over adverse impacts on locals and ecosystems, including dispossession from livelihood resources, biodiversity loss, and pollution (for a global review, see Gerber, 2011; for case studies from Sub-Saharan Africa, see Lyons and Westoby, 2014; Olwig et al., 2016; Richards and Lyons, 2016). In addition, contracts that govern investments into forest carbon tend to leave little space for local communities to participate in decisions that may affect them (Tienhaara, 2012). For South and Southeast Asia, experts acknowledge concerns, such as potential impacts on communities, as well as opportunities, such as the perceived availability of suitable land to develop afforestation projects (Nijnik and Halder, 2013). The concern of this paper is the substantial gap between policy assumptions on paper and project outcomes on the ground, as discussed for example by Clement and Amezaga (2009) for a case in Vietnam. Understanding the flawed assumptions that produce this gap is important to avoid that land-based climate change policies are merely used as legitimization framework for large land grabs that on the ground jeopardize local customary land users and the environment (Hunsberger et al., 2017).

In this context, this paper presents an empirical case study on the first large-scale reforestation project in Cambodia, established with explicit climate change mitigation aims. Through co-produced knowledge from collaborative action research, the paper analyses the formal justifications, the trajectory, and the impacts on the ground of a

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Abstract

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Keywords

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In the past, difficult financial and administrative issues made tree plantations the least attractive type of Clean Development Mechanisms (Thomas et al., 2010). Where they have been established, they frequently spark concerns over adverse impacts on locals and ecosystems, including dispossession from livelihood resources, biodiversity loss, and pollution (for a global review, see Gerber, 2011; for case studies from Sub-Saharan Africa, see Lyons and Westoby, 2014; Olwig et al., 2016; Richards and Lyons, 2016). In addition, contracts that govern investments into forest carbon tend to leave little space for local communities to participate in decisions that may affect them (Tienhaara, 2012). For South and Southeast Asia, experts acknowledge concerns, such as potential impacts on communities, as well as opportunities, such as the perceived availability of suitable land to develop afforestation projects (Nijnik and Halder, 2013). The concern of this paper is the substantial gap between policy assumptions on paper and project outcomes on the ground, as discussed for example by Clement and Amezaga (2009) for a case in Vietnam. Understanding the flawed assumptions that produce this gap is important to avoid that land-based climate change policies are merely used as legitimization framework for large land grabs that on the ground jeopardize local land users and the environment (Hunsberger et al., 2017).

In this context, this paper presents an empirical case study on the first large-scale reforestation project in Cambodia, established with explicit climate change mitigation aims. Through co-produced knowledge from collaborative action research, the paper analyses the formal justifications, the trajectory, and the impacts on the ground of a 34,007ha reforestation project developed by the Korean company Think Biotech. The creation of the concession followed a bilateral agreement on forestry cooperation between Cambodia's Forest Administration and the Korean Forestry Service, which recalled the commitment to conserve the world's forest as agreed in the UNFCCC conventions (KFS/FA, 2009; Lee, 2012). The project area is located at easternmost boundary of the Prey Long forest, one of the most biodiverse lowland forests in Southeast Asia (Hayes et al., 2015). As detailed below, some parts of the project area show a degraded forest, partly because two logging concessions were previously granted in the area. Yet large tracks of the concession are covered with diverse natural forests, now being cut-down to establish a monoculture forest plantation. The project claims to improve the environment through reforestation, even though the biodiversity and ecological functions of tree plantations cannot match those of natural forest (Bremer and Farely 2010).

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Among the initial justifications for establishing this forest restoration project in an area where indigenous Kuy and Khmer farmers practice forms of low-land shifting cultivation, was that the project would stop slash-and-burn activities, enhance forest protection through establishing an artificial forest, and reduce emissions to become part of the Clean Development Mechanisms (CDM). The 'slash-and-burn' activities in the project documents refers to the practice of shifting cultivation, in which fire is used to clear and fertilize land for cropping, followed by a period of forest regrowth, before plots are converted again to fields. Ironically, Think Biotech's project implementation could be described as 'industrial-scale slash-and-burn agriculture' in which vast tracks of diverse forests are cleared, market-bound timber salvaged, and the remaining vegetation is burned to plant acacia monocultures, which are then harvested annually plot by plot, based on a 'sustainable rotational model' (Turton and Seangly, 2016). Meanwhile, the shifting cultivators who had used these forests for generations lost access to forest resources. The initial aim of the concession to become part of the CDM or similar mechanisms – which would require verified emission reduction and contributions to sustainable development – was soon dropped as "too complicated" and the company operates as a conventional, but "sustainable" tree plantation (Interview, Company CEO, 05.11.2016). Yet, thanks to this initial environmental agenda, the company acquired land for forest restoration in cooperation with Cambodia's Forest Administration and not as an economic land concession (ELC). This allowed the company to capture three times the land-size limit of an ELC without having to create multiple companies to circumvent the legal restrictions, as many others have done. The company has also gained access to vast amounts of timber stocks located on the land to be 'reforested'.

The paper draws out how discourses and assumptions of climate change and forestry policies can reinforce the global trend in land grabs (Borras et al., 2011), causing massive changes in effective control over land at the expense of marginalized groups. Some of the project's characteristics analyzed in this paper are country and case-specific and follow general patterns of other land grabs in Cambodia. However, we argue that its relevance goes beyond the country context, as the support for tree plantations as a climate change mitigation strategy might increase globally following the 2015 Paris Agreement (Dooley, 2016; Vigil, 2018). Moreover, the configuration of this land concession shows also important new characteristics due to its environmental agenda that has added novel justifications, configurations and developments to a 'green' form of land grabbing (Fairhead et al., 2012). After introducing our conceptual framework and empirical case study, we will show how this case exceeds the scale of land grabs caused by conventional ELCs, and draw out the role that discursive elements and global policy assumptions of forestry for climate change mitigation played as key 'powers of legitimization' (Beban et al., 2017; Hall et al., 2011). Among these are the unfounded generalized negative assumptions about shifting cultivation, flawed perceptions over 'degraded forest land', and the monofunctional UNFCCC definition of forests unable to capture their diverse social, economic and ecological qualities. All these assumptions and definitions, we argue, require urgent revision in global climate change mitigation policies to avoid producing negative impacts on present vulnerable generations.

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2 Conceptual frameworks, methods and data sources

2.1 Land grabbing, green grabbing and the role of legitimization

The term 'land grabbing' was first coined to denounce the rise of large-scale land acquisitions of foreign investors in poor countries of the global South within the context of the 2008 financial, food and energy crisis (e.g., GRAIN, 2008). Concerns over dramatic changes in effective land control at the expense of marginalized groups and local land users sparked an urgent need to better understand the phenomenon (see special issue edited by Borras et al., 2011). Studies on land grabbing have grown substantially[1], addressing its various dimensions, such as the role of globalization (Margulis et al., 2013), the role of the state for land governance (Wolford et al., 2013), or the bottom-up political reactions from affected groups (Hall et al., 2015). Review studies found that land areas targeted for acquisition were often governed under customary systems of common property and traditional uses (D'Odorico et al., 2017; Dell'Angelo et al., 2017a), which is the case in our study. While many academic studies emphasize the negative socio-economic and environmental impacts of land grabs for local communities, severe threats to mainstream policy agendas like the Sustainable Development Goals have also been identified (Dell'Angelo et al., 2017b)[2]. Land grab studies remain a broad field and raise concerns for land use policy at multiple levels and in diverse locations.

The literature on land grabbing In Southeast Asia has grown substantially (see special issue edited by Schoenberger et al., 2017), and in Cambodia is focused primarily on the vast social and ecological impacts of land grabs for agricultural development (e.g. Davis et al., 2015; Leuprecht, 2004; Neef et al., 2013; Scheidel, 2016; Schoenberger, 2017). Research into land grabs in Cambodia emerged out of the dramatic impacts of economic land concessions (ELCs) as a development strategy, which transferred over two million hectares of land to national and international concessionaires between the year 2000 and 2012 (Diepart 2016). The project we describe in this paper was part of this larger land grab, but contains an explicit 'green' component that formally linked the tree plantation to climate change mitigation aims. Such land grabs have been described in the literature as 'green grabs', which refer to the *"the appropriation of land and resources for environmental ends"* (Fairhead et al., 2012, p. 237).

Compared to the broad field of land grab studies, the notion of green grabbing addresses a sub-set of cases, in which a convergence of environmental aims with processes of land grabbing occurs (Fairhead et al. 2012). It draws attention to the significant role that 'green' factors can play in restricting local users' access to land, such as through environmental policies (e.g. conservation, see Benjaminsen and Bryceson, 2012), green enterprises (e.g. ecotourism, see Ojeda, 2012) or new carbon markets (see Lyons and Westoby, 2014). Although green grabs are not an entirely new phenomenon as already in the past resource expropriations for environmental ends have taken place, rising concerns over climate change and related land-based mitigation interventions, such as through forest carbon capture, have

[1] For an account of how the field of land grab studies has developed, see Schoenberger et al., 2017.

[2] Note that 'land grabbing' entails often a simultaneous appropriation of water resources which has been discussed under the term 'water grabbing'. For various approaches, see TNI (2014) and Dell'Angelo (2018).

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considerably reinforced this convergence and the need to better understand them (Hunsberger, 2017; Vigil, 2018). Green resource appropriations are expanding through two complimentary trends. One in which protecting and sustainably using the environment has become a priority condition for development, and another through which protecting or enhancing the environment in one place can be used to repair sustainability problems created in another place (Fairhead et al. 2012). The project we describe fits within both these trends, as an initiative that claims to protect forests through the development of managed plantations and to plant forests in one hemisphere to capture CO_2 emitted in the other hemisphere, as promoted by Afforestation/Reforestation projects of the Clean Development Mechanisms (CDM A/R).

While previous studies on conservation initiatives to protect Cambodia's *existing* forests have shown how they can interfere with the property relations of local users (e.g., Milne, 2012; Work and Thuon, 2016), in this paper we are particularly interested in how the justifications for the 'making' of new forests through tree plantations can provoke new green grabs. The paper's empirical part unpacks the trajectory of such a case by describing the establishment of Cambodia's first large-scale reforestation concession. Our analysis specifically focuses on the role that green discourses and policies, centered on climate change mitigation and sustainable forestry, played in its legitimization. As Hall et al. (2011) have argued, exclusion from land occurs through many mechanisms. While regulatory frameworks (formal land concessions) and force (evictions through state forces) are perhaps the most noticeable forces in the establishment of land grabs, legitimization discourses that justify the need for certain land uses are a fundamental precursor behind them (Beban et al., 2017). These discourses form an important part of the mechanisms through which land becomes 'investable' (Le Billon and Sommerville 2017). A critical discussion of legitimization frameworks based on environmental aims is therefore vital to understand how green grabs come into being. Furthermore, it sheds light on those flawed assumptions of land-based climate change mitigation policies that require urgent revision to move towards more just and effective land use outcomes.

2.2 Methods and data sources: combining conventional and collaborative action research

To understand the gap between (global) policy assumptions and local realities, local understandings of livelihoods and uses of the environment need to be unpacked, including the local histories and politics of land use. As Temper and Del Bene (2016) note, conflicts over the environment are not only about distributional justice (i.e. who gets what) or procedural issues (i.e., how are decisions made, and by whom), but also about 'epistemic' justice in terms of how assumptions, knowledge and worldviews that inform decisions are produced, formulated and used. In this context, 'co-production of knowledge', based on collaborative research between academics and local land users, is an effective method to assure the production of socially relevant and locally grounded knowledges (Hunsberger et al., 2017; Bell and Pahl, 2017). This method captures forms of knowledge regularly excluded form academic research or policy, like that of indigenous Kuy and Khmer farmers living at the edge of Prey Long Forest. Co-produced knowledge counters dominant discourses put forward by governmental actors or companies, making space for local groups to frame concerns in their own terms (Bell and Pahl, 2017; Temper and Del Bene,

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2016). Conde (2014) argues that co-produced knowledge can support both academics and affected people. Local groups, NGOs and activists have vast local knowledge and data, which helps academics avoid ahistorical analyses or the formulation of uninformed recommendations. For activists and NGOs, academics can add important cross-country perspectives, knowledge on global policies, and may add new skills to be shared with local groups.

Data presented in this paper combine primary and secondary data sources from both co-produced and conventional research. Co-production of knowledge was pursued through collaborative action research between academics (the authors), local land users and people affected by the reforestation concession. There was a common need to better understand the impacts, sources of conflict and diverging understandings of land use. First, some meetings were held in which issues related to the concession were identified. Affected groups shared their history and practices of land uses. Academic partners provided training in basic research methods to affected people, like interview techniques, survey design, GPS mapping of conflictive events (like land encroachment or logging), among others. Following the research trainings, both academics and affected groups conducted research activities, according to different but overlapping interests and needs, but within a framework of mutual support and information sharing that informed the whole research process.

Primary data collected by the academic partners came from several field visits to the concession in Kratie and Steung Treng provinces during 2015-2017, as well from interviews in Phnom Penh. Data collection methods and data sources include interviews, group discussions and exploratory walks with a variety of stakeholders, i.e., villagers living within and at the boundaries of the concession area, company workers and management staff, consultants, and local government officials such as village and commune chiefs. Through the field visits and exploratory walks, local people explained the relevant places located within the conflicting area that do not appear in maps or other data sources, such as sacred forests and burial grounds, as well as local forest uses such tapping of dipterocarp resin trees. Points of interest were GPS mapped and further observed through satellite images. These sources were complemented by data from action research activities conducted by villagers living within the concession area, which were carried out according to their own interests but provided useful information for us to better understand local politics and practices of land uses. Secondary data included mainly a review of documents on Prey Long forest, as well as a review of projects-related documents, i.e. the sub-decrees that established the concession and the protected area, Cambodia's forest and land laws that define user rights and obligations, company history and annual reports. Forest change between 2000 and 2014 was assessed based on high-resolution global forest change data, provided by Hansen (2013). Spatial data on the extension of the concession were taken from LICADHO (2015). Based on these information sources, the following Sections describe the development of the reforestation concession at the outer boundaries of the Prey Long forest.

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3 The Prey Long forest and the Think Biotech reforestation concession

Prey Long is a vast, but rapidly shrinking old-growth forest and one of the few remaining lowland forests in Southeast Asia. Its size is recorded from 300,000 to 600,000 ha (depending on the source), and it sits at the juncture of four provinces between the Mekong and the Tonle Sap Rivers in central Cambodia. The forest is rich in biodiversity and home to many endangered species, including Asian elephants, Gibbon monkeys and rare orchids (Hayes et al., 2015). The forest is primarily evergreen, deciduous dipterocarp and semi-evergreen, but also has large areas of mixed deciduous and pine broadleaf forests, evergreen swamps and open grasslands. There are two large rivers and many smaller tributaries and year-round water flows that travel from deep within the forest and into the Mekong and the Tonle Sap rivers. As a watershed, Prey Long is vital for the health of Cambodia's major rivers and legendary fish production in the Tonle Sap Lake (Michaud, 2013). For thousands of years, this forest has supported a wide range of species, including humans.

The humans in the forest named it Prey Long. Prey is the Khmer word for forest and Long is the Kuy term for ours; Prey Long is 'Our Forest', for both indigenous Kuy and Khmer residents.[3] Kuy people have lived in the region for many generations. Current Kuy population statistics are difficult to determine as some self-identify with the dominant, more valued Khmer ethnicity, but recent estimates cite 150,000 families living in and around the forest (PLCN, 2014). This trend is shifting amid altered values of ethnicity globally and increasing indigenous rights to claim land and resources, but the ethnic boundary between Kuy and Khmer remains fluid. In the Prey Long region Kuy and Khmer share a long history of co-existence and similar traditions. Both groups blend Buddhist and Animist practices, and while tapping resin trees and shifting cultivation is perhaps more important to Kuy livelihoods, many Khmer also use these techniques (Keating, 2013; Swift, 2013).

The forest also supports state and market economic activities. The most recent wave of commercial lumber extraction began with the post-Khmer Rouge civil war years (1980-1999). State sanctioned logging of luxury timber began in the 1990s and in 1996, Cambodia's 11 million ha of forest were cited by the World Bank to be one of its *"few developmentally significant natural resources"* (World Bank et al., 1996) and vital for the transition from a command economy to market enterprises. In 1986, before opening to the global market, Cambodia exported 127,000 cubic meters of timber, by 1996 this number rose to 1,500,000 cubic meters (ibid, p. 11). To curb this dramatic increase, the government suspended forest concessions at the end of 2001 (Le Billon, 2002) and established the legal framework of ELCs for the development of large-scale agro-business in the 2001 land law (RGC 2001). The first of these awarded in Prey Long was Tumring Rubber, in 2007, and today, there are over 33 ELCs in the Prey Long area. While they clear-cut forests for transformation into plantation landscapes, only a few are planting crops. Many are vehicles for illegal timber extraction within and outside the concession area (Global Witness, 2007; see also Milne, 2015).

[3] Some outsiders contest the Kuy designation and suggest a French origin, meaning long. We defer to the interpretation of local residents.

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As a hotspot for forest and biodiversity, Prey Long is a target for conservation and climate change mitigation (Theilade and Schmidt, 2011) and hosts both bottom-up as well as top-down approaches to protect the forest. Grassroots activists formed the Prey Long Community Network (PLCN) in response to the ongoing forest destruction in 2007. They work both locally and nationally to organize and strengthen the community through capacity building and patrolling of the Prey Long forest. The focus is on combating illegal logging and protesting the large-scale forest destruction caused by ELCs (Parnell, 2015). Recognized both nationally and internationally, PLCN was awarded the United Nations Development Programme's Equator Prize in 2015, and in 2016, allied forest activist Ouch Leng received the Goldman Environmental Prize, a 'green Nobel' [4]. Also, in 2016, Prey Long was established as a protected wildlife sanctuary amid dramatic forest restructuring by Cambodia's Ministry of Environment (Zsombor 2016). The establishment of the protected area realized goals of conservation organizations that began in 2009 and paved the way for carbon capture projects like REDD+, currently being developed (Work and Thuon, 2016). Its actual protection languishes in ministerial policy transitions, insufficient and untrained rangers, complicity with the largely unofficial timber industry alongside land concession, and an influx of internal migrants transforming the forest perimeter toward market crops. It is further impacted by the country's first large-scale reforestation project, which is the focus of this paper.

To reverse deforestation, in 2009 Cambodia's Forestry Administration (FA) signed a Memorandum of Understanding (MoU) with Korea's Forest Service (KFS) concerning *"the cooperation on investment in forest plantations and climate change mitigation"* (KFS/FA, 2009). The MoU was part of Korea's 'Low-Carbon Green Growth' model of development that included climate change cooperation with ASEAN partners, and earmarked up to 200,000ha in Cambodia for forestry investments consistent with UNFCCC conventions (KFS/FA, 2009; Lee, 2012). In 2010, following KFS and FA recommendations, the private Korean company Think Biotech Co. Ltd. was introduced to the Ministry of Agriculture, Forestry, and Fisheries (MAFF) who then issued a 'Prakas' (a ministerial proclamation) that established a forest station in Beung Chas (Kratie province) as well as the legal framework for the project (MAFF, 2010). In 2012 the 34,007ha reforestation project was officially granted to Think Biotech. The company is a subsidiary of the Korean Hanwha Corporation, specializing in the manufacture of explosives and weapons. The tree plantation concession was not granted as conventional ELC, which would have been subject to the 2005 sub-decree and related restrictions such as an area limit of 10,000ha (RGC, 2005). It was granted as a forestry concession that gives rights to plant trees in permanent forest estate, which is subject to a less restrictive sub-decree, established in 2008 (RGC, 2008). Large-scale tree plantation concessions under this sub-decree are something new in Cambodia, compared to the many concessions granted as ELCs. This less-restrictive sub-decree allowed this single company to acquire an area more than three times the legal limit of conventional ELCs, while concessionaires of ELC circumvent this restriction by establishing multiple companies (Grimsditch and Schoenberger 2015).

Parts of the Think Biotech project area were previously subject to logging concessions, awarded in the 1990s and early 2000s to the companies Everbright and Pheapimex, who stopped activities a few

[4]Equator prize: http://equatorinitiative.org. Goldman prize: http://www.goldmanprize.org

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years before the MoU was signed. In addition to being larger than other land concessions, the Prakas that legalizes the forest restoration project has objectives that go beyond simply converting land for market commodities. The company was supposed to "*foster community involvement for growing the trees, and to provide employment opportunities to improve their livelihood*" and would *"stop clearing, burning, removing stumps and claiming of forest land"* which refers to forms of shifting cultivation common in the area. It would also "*improve soil fertility through reforestation and biodiversity conservation and reduce the utilization of natural forest by increasing the productivity of artificial forests".* According to the Prakas, their activities were also supposed to become part of the *"Clean Development Mechanisms or other mechanisms that contribute to the reductions of greenhouse gas emissions and climate change mitigation"* (translated from Khmer, MAFF, 2010). Plans to participate in a carbon market were abandoned due to difficulties in obtaining CDM status for the project (Interview Company CEO, 05.11.2016). Certification of forest carbon as a commodity is a highly technical process and indeed difficult to achieve in Cambodia, without substantial investments into related service providers (Mahanty and Milne, 2015).

An initial Environmental Impact Assessment (EIA) was conducted in 2012 by an independent consultancy firm and shared concerns about negative project impacts with the company, the Ministry of Agriculture, Forestry, and Fisheries (MAFF), and the Ministry of Environment (MoE). However, MAFF wanted to move forward and the project started anyway (Interview Consultancy firm 08.11.2016)[5]. For Think Biotech to restore the forest through the establishment of an artificial, 'sustainable production forest', they first had to start clearing the largely forested area used by local communities, massively decreasing the current expanse of the Prey Long forest landscape and the timber stocks it hosts (Picture 1 and 2). The conflicting narratives and perceptions of what 'sustainable forestry' means for different forest users come out clearly: many of the things that the grassroots group PLCN and other forest conservation activists have been trying to combat - i.e. the logging of the remaining forests mosaics of Prey Long and their conversion into managed plantations - are being promoted by both the Korean and Cambodian governments through this company and under the auspices of climate change mitigation and sustainable forest management.

[5] Note that MoE and MAFF sometimes compete for resources and responsibilities and do not always act in concert. An example is in the establishment of the Prey Long protected area, through which forests were transferred from the Forest Administration, under MAFF, to the MoE. MAFF lost out on the new revenue flows coming from forest-based climate change initiatives, like the Think Biotech plantation.

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Picture 1: Development of an artificial production forest through clearance of diverse forests (Kampong Cham commune, February 2016). Source: the authors. Note: This picture shows part of the reforestation site where the company had burnt the vegetation to clear the area, after removal of market-bound timber.

Picture 2: Timber stocks of diverse forests logged by the company to establish managed tree plantation forestry (Kampong Cham commune, February 2016). Photo credit: Vannrith Rong.

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4 Impacts on the ground: livelihoods, land uses and forest carbon stocks

We describe now the project's impacts on the ground in terms of livelihood implications, land use change, and its potential for reforestation and climate change mitigation. While the concession area covers three communes across two provinces, our results refer mainly to Kampong Cham commune (Kratie province), where the company has initiated its operations.

4.1 Livelihoods

Granted in 2010, the company did not begin converting their land until 2012. The company first targeted the land closest to where people lived, logging their resin tree forests and clearing shifting cultivation plots and rice fields. According to villagers and PLCN members, there was no adequate prior consultation and for some people the first contact with the company was when it arrived with machines to clear the land. In Kampong Cham commune, where the company began operations, about 400 families were reported to be negatively affected (Petition letter, 08.05.2017). Based on average household size (NIS, 2008), this translates into a rough estimate of 1500-2000 directly affected individuals in this commune. According to the commune chief "*this issue arose because villagers did not understand about the law. When the company conducted the impact assessment, their lands were full of trees because those were shifting cultivation plots for which there was no legal recognition from the government"* (Interview Kampong Cham commune chief, 03.02.2015). Across the entire concession area, the project would affect around 1900 families, 5970 ha of community forests, 4412 ha of rice fields, 3534 ha of plantation land and 10 ha of sacred forests and burial grounds (Work, 2017).

The commune chief sees the project as a positive development because it brings formal local jobs (Interview Kampong Cham commune chief, 14.02.2015). A former worker estimated that around 800 people work for the company at peak production, most of them involved in the plantation work (Interview Male Worker, 16.02.2016). Yet employment recently dropped to 200 villagers. While the number of formal jobs at peak production is substantially lower than the number of dispossessed villagers that depended on the informal subsistence economy, the changes to local livelihoods go beyond the number of officially affected households. Families that once provided for their relatives amply in a subsistence economy fueled by the forest, their resin trees, and wildlife, are now dependent on unstable wage labor from the company. Some have turned to illegal logging to subsidize their incomes, expanding the informal logging economy fueled by powerful Cambodian elites and lumber brokers who depend in turn on disenfranchised villagers to supply the global timber market (Global Witness, 2015).

Tree plantation development in Kratie Province provoked protests by affected communities. In May 2013, more than 300 locals mobilized to seize two company trucks (Titthara, 2013). Eventually, Think Biotech entered into negotiations with the local community and 2000 ha of company land was returned with a verbal agreement. While the company so far has respected the agreement to not plant on villagers' land, company boundary markers remain on people's land and villagers feel tenure insecure. Negotiations

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over further boundary demarcations are moving slowly amid community disputes and company stalling. Currently, the company is moving forward in clearing the project area in the North. This affects not only households within the boundaries of the concession, but also in adjacent villages, as they lose access to forest livelihood resources such as resin trees, herbs, rattan, mushrooms etc[6]. In May 2017, several community representatives drove to the capital to file a petition to the Korean Embassy asking to stop the expansion of the controversial forestry plantation (Petition letter, 08.05.2017). The Korean Embassy refused to accept the petition letter, adding another incident in which the embassy defended Korean companies despite their controversial activities (Schoenberger, 2017).

4.2 Land use change

Large tracks of the concession have turned into an acacia monoculture that replaces the diverse natural forests that still cover large parts of the concession area in the North. Among the criteria to grant tree plantation concessions within state forest land is that the forest area is degraded or in need for rehabilitation (RGC, 2008). The company claims that an initial assessment of the logged sites showed lower forest cover (Turton and Seangly, 2016). Satellite images suggest that this was indeed the case for some parts of the concession: those areas where the logging companies were previously active, as well as those areas were villagers have been farming – including shifting cultivation – for decades. However, satellite forest data also show that most of the concession area, particularly the areas yet to be cleared in the North, have dense tree cover (see figure 1).

The company's cultivation techniques could ironically be described as 'industrial slash-and-burn agriculture', at an entirely new scale: large-scale instead of small-scale, industrial instead of indigenous and corporately driven instead of culturally informed. It is large-scale instead of small-scale because more than 30,000 hectares are designated for one company to set up a 'sustainable rotational system' in which timber is retrieved for market sale and the remaining vegetation burned down to create fertile land for cultivation. After a first regrowth period of about 15 years, one large plot will be harvested annually, while the other plots are used for tree (re-)growth (see Turton and Seangly, 2016). It is industrial instead of indigenous because the land is cultivated by fossil-fueled machinery and the actors are funded by global capital. Finally, it is corporately driven instead of culturally informed, meaning that profit goals are replacing traditional subsistence aims. And it comes with the large environmental impacts associated with a change from diverse tropical primary and secondary forests into monoculture plantations (Ziegler et al., 2009). Pictures from the current plantation development reveal a burnt landscape with the charred remains of low-value trees uprooted by bulldozers. Villagers asked if they could use the remaining wood

[6] Accounting for all three communes in which the concession is located (Boeng Chas and Kampong Cham of Kratie Province, and Siem Bouk of Steung Traing province), the total population is about 13,500 persons (NIS, 2008), who depend directly or indirectly on the forest ecosystem services.

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leftovers for their houses, but the company declined their request and burnt them on the fields before planting the acacia saplings (Picture 1 and 2).

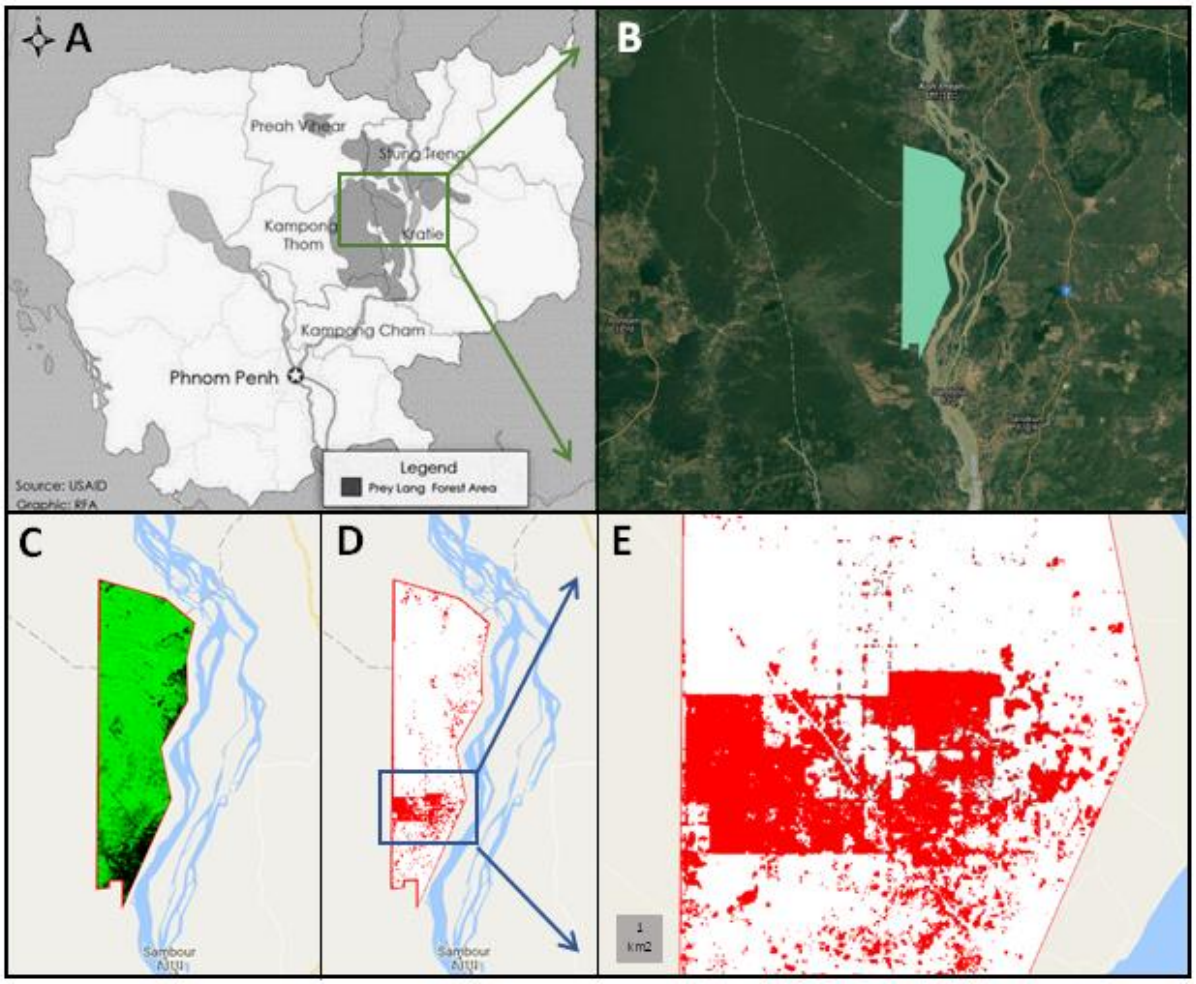

Figure 1: Deforestation in the reforestation concession area. (A) Map of Cambodia and Prey Long Forest Area (Source: USAID). Note that while forest areas are shown as disconnected, they are considered part of the same Prey Long forest landscape; (B) Location of the reforestation concession; (C) Tree cover in the concession area (year 2000) located at the edge of Prey Long; (D) Forest loss in the concession area (2000-2014) and (E) Zoom into the deforested area, showing patterns of industrial plantation development. Source: Authors' elaboration, visualized using Google Earth Engine to combine concession data from LICADHO (2015) *with forest change data from Hansen et al.* (Hansen et al., 2013). *Tree cover refers to canopy closure for all trees taller than 5m, encoded as percentage (0-100) Light green indicates more than 80% of tree cover. Forest loss refers to "a stand-replacement disturbance, or a change from a forest to non-forest state" (ibid). Red dots indicate forest loss, while white dots indicate no forest loss during 2000-2014. 1 pixel = 30x30m.*

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Instead of contributing to the protection of forests by maintenance of already existent forest carbon stocks, the project is currently driving deforestation of the area. Members of the PLCN describe the forest core zone in terms of the sunshine that enters through the canopy. *"It used to be dark, shady, and cool [in the forest]. Now the sun shines through and we feel the heat on our heads"* (PLCN presentation, UNDP Phnom Penh, Oct. 23, 2015). This local knowledge is also visible through global high-resolution maps of forest change (Figure 1). Part A and B of Figure 1 show Cambodia's Prey Long forest area and the location of the concession. Part C shows the forest cover in the year 2000 within the concession area, 10 years prior to when it was granted. At that time large parts of the concession area were covered by dense forests (lighter green areas indicate more than 80% of forest cover; for definitions see figure caption 1). Areas with little forest cover (dark green to black shapes) were mainly located in the Southern part and close to the Mekong River. These are the areas where the previous logging companies were active and the locations of long-inhabited human settlements. Forest loss between 2000 and 2014 (D), indicated by the red shapes, occurred mostly in one area. When zooming into this area (E), it shows clearly the pattern of industrial plantation development (large red squares) organized in a grid road plan, rather than small-scale shifting cultivation. Hence, current large-scale deforestation in the concession area needs to be attributed to industrial forest clearance for reforestation purposes.

4.3 Reforestation and emissions reduction

Can the project contribute to reforestation and to a reduction of greenhouse gases through increasing forest carbon storage? While efforts are underway to establish a closed canopy tree cover, a massive change in forest composition and adjunct users is taking place. Whether the project is relevant for climate change mitigation depends, among other issues, on the potential to reduce emissions in comparison to a baseline scenario, assuring 'additionality'. Additionality is a key criterion for CDM projects, which refers to the requirement that emissions need to be reduced below the level of greenhouse gases that would have been released without the implementation of the project (UNFCCC, 2013). Beyond carbon, also the ecological characteristics, such as biodiversity, the hydrological functions of forests, and related effects on climate at local and regional scales must be considered (Ellison et al., 2017). Currently, deforestation has reduced carbon stocks, and the monoculture degrades ecological functions and biodiversity. The question remains whether the plantation can recover not only previous carbon stock losses from clearing natural forest, but to capture additional carbon over the long-term.

Tree plantations in general vary largely in terms of their carbon stocks, ranging between 82 to 462 tons/ha of Total Ecosystem Carbon (TEC, comprised of Aboveground, Belowground and Soil Organic Carbon) (Ziegler et al., 2012). Estimates for 10-year-old Acacia plantations in Malaysia and West Java report between 80-95 tons of C/ha, whereas growth rates are not linear but decline over years (Matsumura et al., 2008). Further, if parts of the plantations are logged each year, then the area never reaches the full carbon stocks of a 15-year-old plantation, but needs to be time-averaged according to

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their composition, which results in substantially lower carbon stock values. In comparison, carbon stocks of undisturbed natural tropical forests range widely between 119 and 737 tons of TEC/ha (Ziegler et al., 2012). Values of average aboveground and belowground carbon stocks from neighboring forests of Kratie and Kampong Thom province were reported to amount to 474.1 and 135 Ct/ha for evergreen and seasonal forests, respectively (CIJ, 2011). In absence of reliable project data, it is not possible to assess whether the restoration side will capture additional carbon. Yet these comparative values broadly suggest that the reforested area might at best achieve the same amount of carbon/ha as neighboring seasonal forests. However, if compared to neighboring evergreen forests, carbon stocks might be substantially lower.

Finally, without a clear understanding of a realistic baseline scenario - referring to what would have been if the plantation would not have been developed - no arguments can be made regarding additionality of emission reduction. A baseline scenario must include a reasonable understanding of the drivers and trajectories of deforestation and forest use. Such an assessment needs to consider also the effects of the previous logging companies active in the area, as well as forest protection activities of local grassroots activists. Before the project started, forest protection in the same area was actively carried out by the PLCN network, through regular forest patrols, reporting of illegal loggers to the police, confiscation of chain saws, educational campaigns and so on. Forest clearance in the areas they were protecting has been legalized with the reforestation project. Dismissing this grassroots contribution to forest protection has therefore tangible opportunity costs of enhancing forest carbon stocks based on community-based initiatives that aim to maintain natural forests.

5 Forest plantations and climate change discourses as new powers of green grabbing

The Think Biotech forest restoration project shows no signs of delivering the contributions to climate change mitigation, increased biodiversity, or enhanced local skills and livelihoods that were part of the initial formal agreement. In fact, the stated intention to register the project as a formal CDM A/R project or to participate in any other emission reduction mechanisms was immediately abandoned (Interview Company CEO, 05.11.2016) and the claims of livelihood improvements have been strongly contested amid social protests and land disputes. If one did not know the context in which the project developed, it would just look like a conventional ELC land grab characterized by problematic socio-economic and environmental impacts (CCHR, 2013).

Besides these common characteristics on the ground, the broader context and the political economy in which the concession developed did matter, because its 'green' dimension produced new characteristics in this land grab, i.e., a novel institutional framework to facilitate land capture based on new moral ends that value environmental protection. While ELCs were formally justified in a context of agricultural development and rural growth (Scheidel et al., 2013), this forestry concession was set up in the context of climate change mitigation efforts and environmental protection. Through this greening of the plantation activities, a new type of concession could be established, subject to less restrictive laws

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than ELCs[7]. It therefore could legally claim more than three times the land area than conventional ELCs and did not have the same criteria for developing around community holdings (the 'leopard skin' approach required of ELC).

We argue therefore that the deployment of discourses and assumptions related to forestry plantations and climate change mitigation played a key role in the development of this land grab, by serving as legitimization powers that made the land investable to companies. In our case study, legitimizing elements include a generalized assumption of shifting cultivation as a forest degrading practice, which obscures other degrading land uses; a flawed perception of underutilized and degraded forest land; and, finally, the technical UNFCCC definition of 'forests' that is unable to capture their diverse social, economic and ecological qualities.

5.1 Blaming shifting cultivators as a cause of deforestation and forest degradation

Instead of drawing on a nuanced analysis of the local deforestation dynamics, documents supporting the reforestation concession used the narrative that local shifting cultivation practices provoked forest degradation and deforestation. For decades, policies across Southeast Asia curtailed the practice (Fox et al., 2009; Mertz and Bruun, 2017), on often unfounded grounds (Dove, 1983) and in ignorance of long-standing studies on the diverse social and ecological characteristics of shifting cultivation (e.g., Kunstadter et al., 1978). Climate change mitigation discourses have renewed this discrimination due to concerns over their impacts on forest carbon (Erni, 2009; Scheidel, 2018).

There is a vast body of academic research that disproves these generalized narratives and calls for more nuanced discussions about the different forms of shifting cultivation (Forsyth and Walker, 2012; Mertz et al., 2009). Authors emphasize the often positive role of shifting cultivation for biodiversity (Padoch and Pinedo-Vasquez, 2010), for conservation of forest carbon stocks (Fox et al., 2014; Ziegler et al., 2012), or sustainability in terms of non-reliance on fossil-fuels (Kleinman et al., 1995; Scheidel, 2018). Yet, myths about the negative impacts of this ancient practice still remain and support policies marginalizing shifting cultivation (Mertz and Bruun, 2017). Such myths have frequently served political agendas and facilitated the exploitation of the territories of shifting cultivators (Dove, 1983).

In our case much of the degraded area was affected by previous logging companies, illegal loggers working for the larger illegal logging network, as well as a few migrants who recently settled through forest clearance. At the country level, studies suggest that the land concession economy itself drives deforestation; directly, through replacing forests by agricultural concessions (Davis et al., 2015) and indirectly, through dispossessing farmers from livelihood resources, pushing them into new areas and activities to make a living (Work and Thuon, 2016). In our case, the causes of forest degradation are

[7] Note that the more restrictive ELC law does not necessarily translate into better practices on the ground, but still provides a legal framework to address them. Recently, a series of ELCs were revised and cancelled by the government due to failure to comply with the law (Grimsditch and Schoenberger, 2015).

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complex and cannot be attributed primarily to 'local slash-and-burn activities'. Yet this assumption was a significant part of the formal legitimization that justified this green grab for both MAFF and the Korean company.

5.2 Flawed perceptions of underutilized and degraded forest land

The problematic perception that the global South is comprised of large areas of 'underutilized' agricultural land that can be cultivated, has already been addressed in the land grab literature (Borras et al., 2011; Cotula et al., 2009). Nevertheless, the CDM A/R guidelines to establish planted forests continue to promote that "[*i*]*n many developing countries […] large areas of public lands are lying barren or being put under marginal use"* (UNFCCC, 2013, p. 7). This partly stems from land use assessments based on satellite images. Furthermore, for the case of forestry, customary uses such as shifting cultivation are generally not represented in public land management systems that tend to be based on clear-cut distinctions of 'agriculture' and 'forest' lands (Fox et al., 2009).

The idea that land was not efficiently used but rather degraded was also a relevant component in the justification of the above described project and there was no legal recognition of the villagers' rotational fallow plots. Rather than 'lying barren', or being 'degraded' forest land, these plots were in use for agricultural production through ecologically sustainable practices free of fossil-fuels inputs. Other land uses held cultural significance as burial grounds and sacred forests. Such knowledge is not available to planners and companies until local stakeholders are involved in the co-production of knowledge to inform land use planning. Yet unavailability of this knowledge does not mean that the land is underutilized. Therefore, the generalized perception of 'degraded' and 'underutilized' forest land being available needs also to be revised in climate change mitigation policies promoting tree plantations.

5.3 Technical definitions of forests and related reforestation efforts

Finally, what reforestation looks like on the ground depends on the accepted definition of 'what a forest is'. The UNFCCC (2013) defines forests as a minimum area of 0,5-1 hectare, with trees higher than 2-5 meter and with a canopy cover of more than 10-30%. This is a technical and monofunctional approach that can facilitate the labelling of ecologically poor monoculture plantations as forests. It excludes important ecological and socio-economic qualities of forests, such as biodiversity, or ecosystem services on which traditional local forest users may depend (Sasaki and Putz, 2009). The fundamental disagreement of local forest dwellers with this technical definition of a forest becomes visible through the continued opposition of many Cambodian villagers and PLCN forest defenders against planted acacia and rubber forests currently replacing large tracks of Prey Long. As Sasaki and Putz (2009) have argued, this definition can contribute to the loss of forest carbon and degradation of environmental services, *"when natural forests are severely degraded or replaced by plantations but technically remain 'forests'"* (ibid, 226). This is indeed the case in Cambodia. While the country is losing old-growth forests at a staggering

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rate, the government can claim gains in forest cover from the vast plantation of rubber and acacia monocultures that formally count as forests (Chhengpor, 2015).

While Sasaki and Putz (2009) emphasize the need to distinguish between natural forests and plantations and to better define ecological forest degradation within UNFCCC discussions to avoid replacement of natural forests by ecologically poor tree plantations, we argue there is also an urgent need to define social and economic forest degradation for forest-dependent communities. As Ribot (2014) has argued, lacking access to resources is among the main causes of vulnerability within the context of climate change. Following this approach, to account for social and economic forest degradation would require assessments of how forest change and forest plantations alter access to forest for local users. This is necessary to avoid the creation of new vulnerabilities to climate change caused by deteriorating access to livelihood resources.

6 Conclusions

This paper discussed the controversial development of Cambodia's first large-scale reforestation concession, clearing diverse natural forests at the edge of Prey Long for a managed monoculture tree plantation. If one did not know the 'green' context in which the concession was set up, it would look like just another economic land concession. As so many other economic land concessions in Cambodia, it drives dispossession of local land users and environmental concerns such as forest degradation that are key concerns of land grabbing.

When we look beyond the impacts and activities of such projects on the ground and consider the broader context in which they develop, we find that recent concerns and discourses over environmental protection and climate change mitigation add new dimensions to already ongoing processes of land grabbing. These concerns shape fundamentally the political economy in which land grabs emerge, the definitions and assumptions that endorse them and the moral ends which legitimize them. As seen in our case study, such assumptions and moral ends can be the precursor to set up largely new legal frameworks that open entirely new land areas for (disputed) 'green' investments. The green dimension of such projects characterizes land grabs not only through what they may produce on the ground, but fundamentally also through what provokes and enables these projects. And whether related projects develop in a green way or not, they create concerns over social impacts. From this perspective, the notion of green grabbing draws an important focus on how elements of global environmental agendas and discourses can lead to local land use outcomes that marginalize local land users. Given the rising importance of climate change interventions globally, and more generally, the increased greening of global development agendas, a critical reflection on those processes that facilitate green grabbing is necessary.

In light of the 2015 Paris Agreement, in which planted forests for carbon capture may turn into an important mitigation strategy, we have focused particularly on three problematic components commonly found in this approach. The perception that shifting cultivators generally produce

deforestation or degraded forests is an assumption based on a history of discrimination rather than 'hard facts'. The perception that much degraded or underutilized land is available in the South for forestry plantations is flawed, and cannot be known without involving local land users in knowledge-production. Finally, also the technical UNFCCC definition of a 'forest' is problematic because it obscures not only ecological values, but also diverse social, cultural and economic values of forests relevant to local users, whose loss may produce for them new vulnerabilities to climate change. It is not surprising, that these elements and discourses of forestry plantations are locally contested through villagers who oppose related artificial reforestation concessions, while aiming to protect the existing diverse forest environments on which their livelihoods depend. A revision of these problematic components is urgent, not only in Cambodia, but for forestry-based climate change policy in general, to mitigate further adverse impacts of green grabbing and to avoid the opportunity costs associated with ignoring sustainable forest uses of traditional forest dwellers.

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