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To cite this article: Courtney Work, Vannrith Rong, Danik Song & Arnim Scheidel (2018): Maladaptation and development as usual? Investigating climate change mitigation and adaptation projects in Cambodia, *Climate Policy*, DOI: [10.1080/14693062.2018.1527677](https://doi.org/10.1080/14693062.2018.1527677)

To link to this article: <https://doi.org/10.1080/14693062.2018.1527677>



Published online: 03 Oct 2018.



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# Maladaptation and development as usual? Investigating climate change mitigation and adaptation projects in Cambodia

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## ABSTRACT

Based on research into multiple types of climate change mitigation and adaptation (CCMA) projects and policies in Cambodia, this paper documents intersecting social and environmental conflicts that bear striking resemblance to well-documented issues in the history of development projects. Using data from three case studies, we highlight the ways that industrial development and CCMA initiatives are intertwined in both policy and project creation, and how this confluence is creating potentials for maladaptive outcomes. Each case study involves partnerships between international institutions and the national government, each deploys CCMA as either a primary or supporting legitimation, and each failed to adhere to institutional and/or internationally recognized standards of justice. In Cambodia, mismanaged projects are typically blamed on the kleptocratic and patrimonial governance system. We show how such blame obscures the collusion of international partners, who also sidestep their own safeguards, and ignores the potential for maladaptation at the project level and the adverse social and environmental impacts of the policies themselves.

## Key policy insights

- Initiatives to mitigate or adapt to climate change look very much like the development projects that caused climate change: Extreme caution must be exercised to ensure policies and projects do not exacerbate the conditions driving climate change.
- Safeguards 'on paper' are insufficient to avoid negative impacts and strict accountability mechanisms must be put in place.
- Academic researchers can be part of that accountability mechanism through case study reports, policy briefs, technical facilitation to help ensure community needs are met and safeguards are executed as written.
- Impacts beyond the project scale must be assessed to avoid negative consequences for social and ecological systems at the landscape level.

## ARTICLE HISTORY

Received 13 March 2018  
Accepted 19 September 2018

## KEYWORDS

Climate change mitigation and adaption; Cambodia; conflict; maladaptation; forestry; irrigation

## 1. Introduction

Climate change mitigation and adaptation (CCMA) policies often significantly reconfigure who is able to use land and in what ways (Hunsberger et al., 2017). This can give rise to conflicts associated with the implementation of CCMA policies in the global south (Lyons & Westoby, 2014; Scheidel & Work, 2018). Academic research addressing such conflicts often focuses on one type of CCMA project and implementation to reveal the most immediate local dynamics and impacts. While such empirically grounded knowledge is crucial, a too narrow focus on single projects can obscure larger dynamics of governance that go beyond specific project specifications and usually involve a complex network of actors: international donors, national ministries and authorities,

implementing companies, non-governmental (conservation) organizations (NGOs), and several levels of local stakeholders (local authorities, local land users, etc.). The ecosystem and each group of actors both shape, and are shaped by, the projects, which can benefit some participants to the detriment of others (Taylor, 2015). Furthermore, CCMA projects are embedded in larger social and ecological landscapes, increasing the potential for social and ecological spillover effects, in which interventions in one part of a landscape may have unexpected consequences across other parts (Baird & Barney, 2017; Hunsberger et al., 2017).

In the context of increasing policy initiatives attempting to manage landscapes and reconcile conservation and development tradeoffs (Sayer et al., 2013), our advocacy-oriented collaborative research approach intervenes into such managerial initiatives that are currently entering Cambodia's policy arena. This study employs a critical environmental justice lens to investigate the deployment of CCMA narratives and the implementation of CCMA policies in landscapes of extractive development in Cambodia (see Anderson, Kusters, McCarthy, & Obidzinski, 2016). From this vantage point, we gather data about climate change policies and the projects they ignite in collaboration with civil society members and grassroots activists. This ground-up examination of the characteristics of conflict and cooperation in the implementation of climate change policies exposes collusion between Cambodia's kleptocratic, patrimonial government institutions and the international governments, corporations, and development donors initiating CCMA projects in Cambodia. In addition, the paper demonstrates how both the projects and the local-level conflicts they produced are similar to the projects and conflicts of development as usual and fortress conservation,<sup>1</sup> differing sometimes only in their discursive framing. Our final objective is to highlight how the collective impact of these three projects, along with multiple other CCMA and development projects in the landscape, has the potential to produce results that are maladaptive at the landscape level in Cambodia.

In this paper, we selected three of the multiple CCMA case studies examined in Cambodia. An irrigation scheme funded through a development loan from the Japan International Cooperation Agency (JICA), which does not differ from any other irrigation project except that it was justified as an integral component of Cambodia's climate change strategic plan. Another is a protected forest area management initiative supported by the United States Agency for International Development (USAID) and implemented by Winrock International, whose project documents clearly proclaim contributions to enhanced ecosystem services and carbon capture initiatives. The third is a public-private reforestation project initiated within the context of a forestry cooperation programme between the Korean Forest Service and Cambodia's Forestry Administration. This reforestation project was established with explicit reference to the mitigation of climate change and contributions to clean development mechanisms (CDMs). Neither of these materialized. The project director understands the project to be a 'commercial plantation business' and the project landscape is indistinguishable from an industrial tree plantation (Interview, TB director, 1 November 2016). To support our claims of collusion and the discursive obfuscation of development as usual, we first lay out the different forms of conflict that emerged at the project level as concerns of environmental justice. The separate categories of distributional justice, participation, procedural justice, and the recognition of different worldviews and values regarding resource uses overlap and cascade, such that the recognition of worldviews, for example, may be a pre-requisite for procedural justice and fair and just distribution (Schlosberg, 2004).

We also note that, while outright use of violent force is less common, exclusion of locals from resources continues as national and international actors deploy the 'power of informality' (Beban, So, & Un, 2017) that downplays conflicts, opens space for elite collusion, and excludes resource users just the same. Our case studies reveal repressive or legitimizing regulations, ignorance of community concerns, and non-compliance with safeguard policies, made possible through informal political connections, secrecy, and obfuscation. In addition to these case study analyses, we offer a preliminary mapping of the potential physical, biological, social, and livelihood impacts of these projects at the landscape level. When considering the impacts of several of these projects, we find that while they may indeed serve adaptation at the project level, there is no evidence of climate change mitigation, and projects may neglect or reinforce the multiple drivers of vulnerability, increasing potential for maladaptation at the landscape level and over time (Magnan et al., 2016, p. 652). Maladaptation has been defined as 'actions, or inaction that may lead to increased risk of adverse climate-related outcomes, increased vulnerability to climate change, or diminished welfare, now or in the future' (Noble et al., 2014, p. 857); or

alternatively as, 'action taken ostensibly to avoid or reduce vulnerability to climate change that impacts adversely on, or increases the vulnerability of other systems, sectors or social groups' (Barnett & O'Neill, 2010, p. 211).

Adaptation projects can secure access to resources for some groups by excluding others from the same resources (Taylor, 2013). For example, the segregation of water into irrigation canals can privilege some users and disadvantage others. In addition, one irrigation project may stabilize water supply during floods and droughts, but the cumulative effect of several irrigation projects in the same area is understudied. In this paper, we present some of the processes that contribute to this risk in contemporary development and CCMA projects. We argue that the complex environments where CCMA policies and projects meet the lives of citizens are fraught with social and environmental injustices, not because of isolated corrupt national governments, unscrupulous business people, or bankers, but because of a continuation of harmful market-based development policy as usual, that has globally produced concerns for many years (Escobar, 2006; Mosse, 2005; Rist, 2008).

The paper is structured as follows: The next section describes the research area, our approach and methods. We then outline our key terms and discuss project level case studies. This is followed by an analysis of the different types of conflicts and injustices, the non-compliance processes between national and international actors, and the social and ecological impacts of projects in a landscape perspective. We further suggest that the potential maladaptive effects of these projects in an era of climate instability and increasing intensity of land management required to instigate CCMA policies are calls for a humble re-evaluation of climate policies.

## 2. Case study areas, research approach and methods

Research was conducted mainly in the Prey Lang forest region in eastern Cambodia, and in the Greater Aural region in western Cambodia (Figure 1). Our project focused on the intersections of CCMA projects and land grabbing at the landscape scale. With this in mind, we investigated projects related to the production of crops suitable for biofuels (sugar cane and cassava), industrial tree plantations, irrigation schemes, and hydro-power projects as well as conservation and related Reducing Emissions through Deforestation and Forest Degradation (REDD+) initiatives (Hunsberger et al., 2017). Three examples were selected that are related to CCMA initiatives in different ways, and which exemplify the intersections of international institutions with national and local officials and stakeholders.

Our research agenda deploys a landscape perspective, which considers all the physical, biological, and cultural phenomena interacting in a particular area, over a period of time (Leyshon & Geoghegan, 2013). This brings to light social and environmental injustices induced in attempts to manage development and conservation as separate entities in living landscapes (Sayer et al., 2013; see also, Castella et al., 2013). For the purposes of this paper, we look at how the three case studies are embedded within the larger landscapes of Prey Lang, the Greater Aural Area, and also the Tonle Sap Basin that overlaps them. We focus on the post-war development era in Cambodia, starting in 2000.

Co-producing knowledge with affected communities is a key method, and contributes to textured data about the complexity of conflicts created by CCMA and also the ecological and subsistence processes they disrupt (Hunsberger et al., 2017). Importantly, it creates a flow of information between communities and researchers that we used to directly intervene into injustices at the project level. We established an environment for the co-production of knowledge through three main activities: training, research, and information sharing. Project researchers informed grassroots community networks on CCMA policies and trained them in research methods. Grassroots researchers in turn informed academic researchers on community concerns. Project researchers and grassroots activists conducted research related to projects associated with CCMA, elite and migrant capture of forest land, and the exploitation of community forests, and these data and insights were shared and discussed. Community networks shared data with researchers about forest crimes and the activities of companies, government officials, and conservation organizations. In turn, academics shared information from their desk and urban research by explaining new policy and land use initiatives that may affect the networks and by sharing new information learned through interviews with donors or companies. Community and academic researchers were in regular contact and alerted each other to emerging concerns, initiating advocacy



(the normative underpinning supporting one resource claim over another). These ‘powers of exclusion’, as termed by the authors, work together to effectively exclude certain users like subsistence farmers or indigenous people from the water and the land. All property claims are exclusionary, but attention to who and what is excluded or included illuminates the inherent contradictions of this process, which we argue is especially important in the current era of climate instability. Using the concept of ‘powers of exclusion’ to examine land conflicts, Beban et al. (2017) argue that in Cambodia the ability to exclude some resource users and include others is also effected through informal networks that link local officials and business elites to the highest echelons of central government. The authors call this the ‘power of informality’, through which land and other resources are distributed ‘off the books’ through secretive, exclusionary political networks. Beban et al. (2017) focus primarily on the informality inherent in national-level ‘neo-patrimonial’ networks that connect the highest levels of government officials as ‘patrons’ who distribute state resources to ‘clients’ who can operate even at the village level. While Beban et al suggest that international markets and their standards may make space for more just and equitable exclusions, our data alters this perspective to include collusions, lack of transparency, and off-book activities between national actors and representatives of international donor, conservation, and corporate organizations that complicate the impartiality of the market and the implementation of international standards and safeguards.

### **3.2. Conflict and cooperation**

In much of the development literature, conflict is something that can and should be avoided by providing, for example, security, justice, and jobs (The World Bank, 2011, p. 270), or ‘conflict-sensitive mitigation and adaptation strategies that contain conflict and contribute to cooperation via effective institutional frameworks, resource management initiatives and climate change mitigation and adaptation projects’ (Scheffran, Brzoska, Kominek, Link, & Schilling, 2012, p. 871). Conflict, we argue, is not an outcome necessarily to be avoided, nor, as we demonstrate, is cooperation necessarily beneficial. Conflict is a signal that differing needs, opinions, and access to power are at play. Whatever drives the conflict can be identified and processes transformed into something that shares benefits more equitably, producing stronger sustainability. In the case studies we describe, only one conflict situation was transformed toward outcomes that satisfied both the ‘developers’ and the ‘developed’, that is, in the JICA irrigation rehabilitation project. The crux of our paper is that policy safeguards were already in place to avoid each conflict situation, and that the power of informality through effective cooperation between national elites and international donors, organizations, and corporations facilitated resource exclusions.

### **3.3. Maladaptation**

We take a critical approach to the concepts of adaptation and vulnerability that support the CCMA projects we present here (Castella et al., 2013; Ribot, 2014; Stensrud, 2016). We also take a critical approach to the concept of mitigation, and invoke the term maladaptation to intervene into the persistent optimism of policy driven solutions (Mosse, 2005). Following Taylor (2015), we suggest that adaptation to climate change includes a broad array of institutional practices, discourses and policies, and includes any and all activities created in the context of managing a changing climate (mitigation projects, for example). It is within this broad framing that we discuss the possibilities for maladaptation. Climate change requires people to adjust (‘adapt’), and the inability of persons and communities to adjust to environmental or economic instability is a part of maladaptation. Further, people must be able to adapt to not only new hazards and changing resources, but also to new development initiatives, and to changes in access to and control over resources (Eriksen, Nightingale, & Eakin, 2015), which are predicated on the idea that climate and society are separate fields acting independently of each other (Taylor, 2015). Activities grounded in the idea that ecosystems and climate are separate from human social life can inhibit adaptive processes, and also make space for decisions that deliberately place greater emphasis on short-term outcomes over longer-term threats, and fail to consider the full range of project interactions (Noble et al., 2014, p. 837). What follows are some empirical examples of this process.

## 4. The case studies

### 4.1. Rehabilitation of the Lum Hach irrigation dam, funded by JICA

In 2008, the villagers of Anhchanh Rong commune (Kampong Chhnang province) lent their support to a project to rehabilitate the deteriorated Lum Hach irrigation infrastructure, initially built during the Pol Pot regime (Group Discussion, 13 July 2016; 10 January 2017). The dam rehabilitation is part of a larger irrigation development project, called the 'West Tonle Sap Irrigation and Drainage Rehabilitation and Improvement Project' (WTSP), funded by JICA through a 42 million yen loan (JICA, 2011). It is also adjacent to another large-scale irrigation project developed by the Chinese Sinohydro Corporation. Both Sinohydro (downstream) and Lum Hach (upstream) dams take water from the Boribor River that flows into the Tonle Sap. While neither project deploys climate finance, the JICA project documents (2011, p. 7) state the project will '*contribute to efforts to adapt to climate change by improving responses to changes in precipitation amounts and patterns through the upgrade and development of irrigation facilities.*' Additionally, Cambodia's Strategic Climate Change Plan (2014–2023) identifies water security and irrigation development and rehabilitation as key strategic objectives for adapting to climate change (RGC, 2013).

However, communities discovered that the Lum Hach project would greatly expand the original canals (JICA, 2009), and that officials did not plan compensation for communities, because 'they were giving people the chance to do rice' (Interview, AEC, 5 June 2016). A petition letter delivered to the provincial governor asking for fair and just compensation received no response (Request letter, 5 August 2016), which prompted community representatives, with technical support from NGOs and academic researchers, to submit their petition to JICA, as well as Cambodia's MoWRAM (Ministry of Water Resources and Meteorology) and MoEF (Ministry of Economics and Finance). They requested details of the project and its potential social impacts (Petition to JICA, MoWRaM and MoEF, 07 December 2016). The initial response to the petition from Cambodian authorities, however, was a meeting with statements considered intimidating by the community and a letter from JICA written in English (unintelligible to community representatives) (Field Report Community Researcher, 26 December 2016). This failure of due process prompted a second letter from the community, citing the 2002 Japan Bank for International Cooperation (JBIC) guidelines to which JICA adheres, that require '*transparent and accountable processes*' (JBIC, 2002, p. 3). The community refused to accept the irrigation project without clear information, including a project plan and proposal, a map of canals, the number of affected households, and just compensation for their losses (Petition to JICA, MoWRaM and MoEF, 19 January 2017). On 1 February 2017, JICA and national-level authorities held a consultative meeting in which villagers were promised compensation equal to the above-mentioned Chinese Sinohydro project; the authorities promised to announce the number of affected villagers with land sizes and compensation rates at the commune hall, and a phone hotline was established for grievances. As of early April 2017, additional meetings were held, and official slips containing the higher compensation rates were provided for affected villagers (Field Notes, 3 February 2017; Response Letter of JICA, 31 January 2017).

The 'power of informality', was at work between JICA representatives and ministry officials in the early stages of the project, characterized by a lack of consultation, non-transparency, ignorance of community concerns and non-compliance with their own guidelines. This stretches Beban et al.'s (2017) framing beyond state patronage into the broader workings of development projects in general, and is repeated in the next two case studies. Importantly, only with the help of external intervention through watchdog NGOs and action research was the project implemented according to policy guidelines<sup>2</sup>.

The need for irrigation is part of a larger discourse attached to climate change and what adaptation should look like, which favours modern models (Interview, JICA 17 October 2016; see also, Newell & Taylor, 2017). Increased or improved infrastructure is a key framing device for climate change adaptation projects in Cambodia (Lebel, Käkönen, Dany, Lebel, & Thuon, 2018) and irrigation is an important element in those strategies (RGC, 2014, 2013). Both irrigation projects in this research site are currently under construction, and have already impacted local communities through land-loss and the struggles required to ensure fair treatment under the development. What remains to be seen is how the projects will affect the larger socio-ecological system of the Tonle Sap river basin over the long-term (see discussion below).

## 4.2. Prey lang protected forest area

The Prey Lang landscape is the largest contiguous lowland forest remaining in Southeast Asia, supporting 200,000 persons and rich biodiversity. It was established as a protected area through the Ministry of Environment (MoE) in 2016, along with five other forests previously under the control of the Forest Administration (FA) of the Ministry of Agriculture, Forestry and Fisheries (MAFF) (Pye, 2016). The events we document here involve the relationship between the FA and Winrock International (WI), the organization administering the USAID Supporting Forests and Biodiversity project (SFB) in Prey Lang. The FA prepared a draft sub-decree to ratify protected area status for Prey Lang forest in 2011, and realizing this became a key goal of the SFB project, which started in November 2012 to improve conservation and governance of the Eastern Plains and Prey Lang Landscapes to *'mitigate climate change, conserve biodiversity, and increase equitable economic benefits to forest communities'* (WI, 2015, p. 2). The project has three objectives: 1) increase effectiveness of the government and other natural resource managers toward sustainable forest management and conserving biodiversity, 2) improve dialogue on forest management and economic development, and 3) increase equitable economic benefits from the sustainable management of forests (USAIDOIG, 2016, p. 1).

Two important failures impacted this protected area initiative. The first was a failure of justice through not recognizing local ways and rights to forest use, a long-standing issue in fortress conservation projects (Dunlap & Fairhead, 2014). The sub-decree excluded local residents from free access to the forest and many of their traditional use rights, and gave the FA stronger authority over forest use (RGC, 2011 articles 5 and 6; see also, IW, 2011). Foreseeing these issues, the SFB project planned to institute community forests, indigenous communal land titles, community protected areas, community-based production forests, and community conservation forests within and bordering the proposed protected area. However, only the establishment of community forests was actually pursued, designed to form a 'buffer zone' around the protected area perimeter and to provide forest access for local people (Interview Winrock director, 7 July 2015). In addition, livelihood projects were instituted, such as raising poultry and growing cashews for market sale, in an effort to compensate for decreased forest access and to slow illegal logging. The second failure was not to recognize the obvious involvement of FA and other officials in the business of illegal timber extraction (Work & Thuon, 2017; see also, Milne, Pak, & Sullivan, 2015).

Failure to recognize government officials as part of the timber economy, along with the local loggers who visibly cut and sell along well-established pathways, helps illustrate how the 'powers of informality' go well beyond neo-patrimonial systems. USAID funding requires that all projects cooperate with government agencies, which becomes a problem only when relations with government officials preclude the participatory approaches also mandated by the organization. Both USAID and Winrock representatives lamented the unintended collusions made possible by this mandate (Interview Winrock director, 7 July 2015; Meeting USAID 7 June 2017). While organizations cannot control corrupt state actors, privileging those relationships contributed to supporting further marginalization of forest communities and also supported officials and community members involved in illegal logging, despite adequate evidence to warrant changes (Work & Thuon, 2017). Since the initiation of the SFB project in 2012, illegal logging and forest degradation continued unchecked, as did the anticipated increase in forest clearing before protected area ratification.<sup>3</sup> Locals report that this deforestation manifests in localized monsoon instability, and further effects on the watershed are yet unknown. What is known are the dramatic changes to local livelihoods, away from subsistence practices toward the extractive production of market crops, which privilege certain actors over others and degrade forest resources (Work, 2018).

## 4.3. Think Biotech Cambodia, co. Ltd. reforestation project

Deforestation of old-growth forests in Prey Lang started with Logging Concessions (LC) in the late 1990s, and continues with Economic Land Concessions (ELCs), Mining Land Concessions (MLCs), Social Land Concessions (SLCs), and reforestation projects justified by CCMA. Think Biotech Co. Ltd. is a 34,007 hectare tree plantation on the eastern edge of the forest, conceived under a Memorandum of Understanding (MoU) on forest-based climate change initiatives in partnership with the Korean Forest Service (KFS) (Forest Administration, Ministry



of Agriculture, Forestry, and Fisheries, Korean Forest Service, 2009). The project area is three times the legal size for an ELC, because it was conceived as a 'reforestation' initiative under climate change discourses. Think Biotech, a subsidiary of South Korean explosives developer Hanwha Corporation, was recommended by the KFS for a public-private partnership with the FA in December 2010 for 'forest restoration' under 'Clean Development Mechanisms' (MAFF, 2010, article 2, *Government documents translated from Khmer*). MAFF approved the project in three communes in Kratie and Steung Treng provinces in December 2010 under recommendation from the FA that the area was 'degraded forest' (Forest Administration, Ministry of Agriculture, Forestry, and Fisheries, 2010). The company agreed to pay the ministry an initial fee for the right to develop the land, and to provide a percentage of their profit each year until the end of the contract (Forest Administration, Ministry of Agriculture, Forestry, and Fisheries, 2010). The Prakas (ministry proclamation) for this project states that the company will 'improve soil fertility through reforestation and biodiversity conservation ... [and will] contribute to the reductions of greenhouse gas emissions and climate change mitigation'. Another main objective is 'to stop slash and burn activities, and ... illegal claims to trees ... [and] to reduce the utilization of natural forest by increasing the productivity of artificial forests' (MAFF, 2010, article 2).

In practice, the company is clear cutting diverse natural forest and converting it to acacia plantation (Scheidel & Work, 2018). In its founding documents this project fails to recognize that most parts of the landscape were not 'degraded' but rather had been selectively logged and were in use by residents in customary ways. Dismissing their ways of life has translated into distributional injustice, so that people who relied on the forest for generations have been dispossessed from previous livelihood resources, such as shifting cultivation, resin tapping, and the collection of non-timber forest products (NTFPs). The 'powers of informality' facilitated the creation of this CCMA project in a forested landscape, which could never be considered a reforestation project under guidelines for the CDM (UNFCCC, 2013) because large parts of the 'restoration' area show high natural forest cover. In fact, the project was never submitted for consideration under the CDM according to the company director (interview 1 November 2016). This speaks to the destructive capacities of CCMA discourses under which projects can be only legitimized, but not necessarily pursued on the ground (Scheidel & Work, 2018).

Before the arrival of the company, local livelihoods consisted mainly of shifting cultivation, seasonal wet rice cultivation, and the collection of NTFPs in Prey Lang forest such as resin tapping, mushroom collecting, traditional hunting, and fishing (Group Discussion Kratie, 13 February 2015). An Environmental Impact Assessment (EIA) sent to Think Biotech, the FA, and the MoE in 2012, noted substantial impacts to social and environmental dynamics and concluded that without modification it would be bad for the community (Interview, Consultancy firm, 11 August 2016). 'We still had good forest after those two companies [FC] were gone. Then, Think Biotech came and everything was destroyed: forest, wildlife, and even water in the streams' (Interview, PLCN activist, Kratie, 08 February 2017). Without adequate community consultation and despite the EIA, the company started its operation in June 2012, clearing approximately 1000 hectares of farming and shifting cultivation land affecting 178 local households (Group Discussion Kratie, 14 February 2015). Community impacts slowed after protests and some compensation, but 400 hectares of disputed land remain inside company boundaries (Interview commune chief, 3 February 2015). The company continues to clear natural forest, which continues to impact on social and ecological systems. At peak production, the company employed approximately 800 workers (Interview KR 16 February 2016). In June 2016, Think Biotech fired everyone except tree nursery and acacia care staff. The community petitioned Cambodian authorities regarding the illegalities and irregularities of the project, but the Korean Embassy refused to accept the community's letter. (see Seangly & Turton, 2018). However, the company continues to clear healthy natural forest for conversion to monocrop plantation forestry (Field visit, 31 March–4 April 2017; 3–5 January 2018).

## 5. Discussion: conflict, non-compliance and maladaptation in Cambodia

The case studies we present above highlight just some of the details we recorded during our research. This section discusses specifically the elements of grassroots conflicts, collaborations between donor organizations, companies, and the Cambodian government that exacerbated conflict, and the maladaptive potential of these projects.

### 5.1. Conflict

It is now well established that CCMA projects and those related to CCMA consistently create conflicts in their implementation (e.g. Dunlap & Fairhead, 2014; Montefrio & Dressler, 2016). In the three case studies above, conflict occurred over injustices at the level of procedure, distribution, and recognition. In the JICA irrigation case, we highlighted the failure to follow prescribed procedures for community involvement, disclosure of project details and prescriptions for fair compensation. The Think Biotech reforestation case demonstrates conflicts largely generated due to unequal distribution of benefits and burdens, with the community bearing the social, economic, and environmental costs of the project, while the company and government ministry received the resource and monetary benefits respectively. In the USAID protected area case, we emphasized how the conflicts arose largely because the practices and needs of the community in relation to forest management and use were not recognized. The project excluded local residents from the proposed protected area and attempted to restrict community access to the forest by only allowing local use inside the community forest areas.

By conflict, we are not limiting the discussion to violent conflict. Rather, we include conflicts that arise over injustices and that result in visible mobilizations against projects. These conflicts are therefore signals that maladaptive or unjust processes may be occurring, and as such bear the potential to expose and transform these underlying processes. Adaptation processes can benefit one group while disenfranchising another (Barnett & O'Neill, 2010; Taylor, 2015), and the conflicts we describe mark such instances of injustice. Here, we draw out ways in which sustainability and conservation initiatives often exclude communities from both access to resources and from any authority for their designated use (Peterson, 2015), even while authorities and conservation organizations sometimes violate their own guidelines for participatory engagement (Ruiz-Mallén, Corbera, Calvo-Boyero, & Reyes-García, 2015). None of these case study examples are isolated incidents particular to the Cambodian circumstance and there is mounting evidence that such conflicts and injustices are the rule rather than the exception (Dunlap & Fairhead, 2014; Martin et al., 2016). The conflicts that continue to arise in such development initiatives, now closely linked to CCMA projects, point to the need to re-evaluate the foundational framing of climate change policies in ways that decentre the goal of economic development toward more socially and ecologically sound goals.

### 5.2. Collaboration, collusion and non-compliance

The dynamics of conflict we describe here show how the problems of inequitable distribution, improper procedures, and failed recognition of legitimate community land use were each facilitated by some degree of formal and informal collaboration between powerful actors to the detriment of the less powerful, as well as the deployment of legitimizing climate change discourses. In the Think Biotech case, company officials collaborated with government officials in the Korean Forestry Service, the FA and MAFF to push forward a project that circumvented a locally produced EIA, and would not have met UNFCCC guidelines for forest restoration projects under climate change initiatives (due to labelling diverse natural forest as 'degraded'). The company never attempted to register the project under the CDM so the climate change framing was only discursive. This is not at all uncommon across development projects (Milgroom, 2015) and is becoming increasingly visible in climate change related projects as well (Cavanagh & Benjaminsen, 2014; Lyons & Westoby, 2014). In the JICA case, an initial disregard of the guidelines governing their loans involved both JICA monitoring staff and MoWRaM officials. According to several affected villagers, none of the required activities of monitoring, information dissemination, community consultations, or fair compensation for losses were implemented until the community, supported by NGOs and researchers, intervened. Intimidation by local government officials forced another petition, which received an adequate response. For the conservation case study, USAID was well aware of the problems in Cambodia's forests and in 2005 noted that most communities are not able to '*exercise their rights to protect forests from those exploiting them nor do they have access to any forms of dispute resolution. Therefore, conflicts can erupt*' (2005, p. 25). Nonetheless, the procedures for their SFB project exacerbated these very problems. This problem was not isolated to Cambodia (see, Stearman, 2006 in Bolivia), nor is it isolated to USAID, as conservation and community-based programmes around the world suffer from similar

problems of inability to enforce forest protections, restrictive regulations on communities (Ruiz-Mallén et al., 2015), and collusion between big conservation organizations, donors, corporations and governments (Hance, 2016; Milne, 2015).

### **5.3. Maladaptation in action**

#### **5.3.1. Reforestation and conservation**

Forest management through conservation and reforestation projects are an integral component to climate change policies. These two initiatives are converging on the Prey Lang landscape. Their interactions, however, are not contributing to climate change adaptation, but are rather exacerbating problems on both social and ecological systems.

Ecologically, plantation forests can have an adaptive or maladaptive impact on biodiversity or the carbon cycle, depending on what land use they replace. Think Biotech has already cleared several thousand hectares of natural forest in the project area, ploughing over streams and replacing forest with monocrop acacia saplings. There is uncontested agreement that replacing natural forest with plantation forest decreases environmental benefits and biodiversity (Bremer & Farley, 2010; Brockerhoff, Jactel, Parrotta, Quine, & Sayer, 2008). Three significant tributaries flow across the reforestation project from the forest into the Mekong river, with only one stream affected so far. Action research showed this stream is currently a fraction of its former volume, devoid of fish, and dries up immediately after the rains, having previously flowed well into the dry season. The long-term consequences of this are unknown, but that streams crossing cleared areas of the project are no longer reaching the Mekong in the dry season could signal more dramatic long-term changes.

Prey Lang forest plays a vital role in Cambodia's hydrological cycle, generating rain water, holding ground water and runoff, and providing carbon materials for the flood pulse ecosystem of the Tonle Sap (Forbes, Jarina, Gavoury, & Bassinger, 2011). Prey Long is a primary watershed, regulating water and sediment flow to the Mekong River and the Tonle Sap Lake, and the swamp forests of Prey Long play a significant role in regulating water and sediments flowing into Tonle Sap and Mekong River (Theilade & Schmidt, 2011). There are two key river catchments that flow through Prey Lang, contributing about 22% of the entire Cambodian Mekong River Basin catchment area (Forbes et al., 2011). The forest already suffers from poor forest management that leads to increased soil erosion, loss of vital topsoil, river sedimentation and associated impacts on aquatic life, altered river flows, change in flood regimes, loss of critical habitat, and loss of biodiversity (USAID, 2005, p. 3). In light of this, activities that contribute to continuing rather than decreasing forest degradation, such as those uncovered in this paper, can reduce the mitigation potential of conservation initiatives through leakage (Wunder, 2008), and create long-term maladaptation by altering water flows in a flood-drought sensitive environment (Yusuf & Francisco, 2009).

Continued forest degradation inside the conservation project area was facilitated, rather than obstructed, through the SFB project activities in three key ways. First, activities went forward as if there were no connections between local officials and illegal logging activities. When our research activities began in 2014, researchers witnessed traffic jams of tractors entering and leaving the forest to haul timber. At the time of writing, this traffic has slowed, but the availability of high-grade timber has also decreased and even in the core area of the forest, recent field visits reveal that the once full canopy has now opened to the sky. The second issue exacerbating forest loss is that the poverty alleviation development projects encouraged by SFB increased market crop production, which has driven forest conversion for agriculture (Work & Thuon, 2017), and dramatically altered the socio-economic basis of previously sustainable livelihoods. Finally, locally organized forest protection activities were undermined by forced exclusion from the protected area. Both the reforestation and conservation projects undermined the long-standing economies and cultural traditions of people who have lived in and next to the forest for many generations. These projects, however, do benefit the companies, government ministries, and international NGOs involved in their execution, and their maladaptive qualities extend benefits to local officials and elite timber traders.

In many interviews across Prey Lang, local people report dramatic alterations to their social lives, their physical health, and their livelihoods. While each and every living organism on the planet is dependent on natural resources for survival, the economic and social systems of persons living in and next to the forest are intimately

tied to the natural resources in the area (Work, 2018). Exclusion from resources through a conservation initiative and the conversion of forest area by the industrial plantation (reforestation) project have completely overturned former ways of life. Many people are now market-dependent for their livelihoods and are not passing their forest knowledge on to their children. Action research in the case study areas has documented altered rainfall patterns, the desiccation of streams, depletion of forest canopy, and disappearance of multiple forest species. The implications of these short-term impacts suggest more damaging effects in the years to come, if fundamental alterations to the global response to climate change do not occur.

### 5.3.2. Irrigation

That development and CCMA are intertwined activities is insufficiently examined, and this paper offers preliminary ideas toward a more complete treatment of this important transformation in global development. The data we offer from Cambodia is suggestive of larger trends that require further investigation. The irrigation project we examine, and also the tree plantation discussed above, present an intertwining of development projects and climate change adaptation responses, which can impact the natural productivity of the Tonle Sap flood plains. Previously supporting relatively high levels of income and food security, current population increases and economic development initiatives in the Tonle Sap have increased market access, population growth, and resource degradation in the area through forest clearing and agricultural encroachment (ICEM, 2013, p. 155). This land-use intensification is compounded by alterations to the Tonle Sap Basin hydrology through upriver dams on the Mekong river, and are further strained by ongoing and planned economic activities (Johnston et al., 2010, p. 25). Assessments of the effects of Tonle Sap Basin irrigation projects on the Tonle Sap flood pulse suggest that it will reduce rainy season water availability and increase dry season availability (Lebel, Sreymom, Sokhem, & Channimol, 2015). Earlier studies note an increased percentage of open water (18–21%) and water for rice and plantation crops (10–14%), and a decrease in water availability for seasonally flooded habitats (13–22%) and flooded forests (75–83%) (Arias et al., 2012). What these numbers suggest is a rather dramatic alteration in the dynamic interconnections between the mutually supporting aquatic and terrestrial zones of the flood-pulse ecosystem – favouring habitats for market production over other habitats. Climate variability will cause further changes, but there is no question that infrastructural development, especially hydropower and irrigation dams, will be the primary factors contributing to altering the Tonle Sap flood pulse that is vital for sustaining ecosystem health (Kummu et al., 2014).

JICA and MoWRAMS's project-based approach to irrigation development raises concerns for how adaptation projects can be 'reactive and project-driven' (Lucas, 2013, p. 403). This project is reacting to the problem of changed precipitation and water shortage at the local project level, however it misses the potential for broader ecological and social impacts. The number of irrigation projects in this Aural region basin cannot be determined with existing data. However, Chem, Kim, and Khiev (2010) and Ham and Someth (2015), report fifteen other irrigation sites to the west of the river, and irrigation features prominently in both Cambodia's climate change and development strategies (RGC, 2014, 2013). These technologies profoundly rework the balance of power within the agrarian environment, but are now actively promoted as part of standard development policies that also help adapt to climate change. The involvement of development donors like JICA can potentially exacerbate the possibility for maladaptive outcomes because development is their mandate, a fact that can preclude challenging the status quo (Lebel et al., 2018). We interviewed the climate change advisor for JICA, who told us that 'Cambodia is already an adaptive society, but now they are moving to a more modern kind of infrastructure and planning' (17 October 2016), which he stated also corresponds to JICA's vision. The large number of irrigation projects around the Tonle Sap flood-pulse system can be expected to alter ecological processes in unknown and unexamined ways, with the potential for creating new vulnerabilities.

Communities in this region are already vulnerable through the disruptions and displacements of war, the inequalities born of land policies favouring well-connected community members and external elites (Beban et al., 2017; Work & Beban, 2016), and furthermore from the recent encroachment of sugar cane and cassava plantations into the area (Hunsberger, Work, & Herre, 2018; Pred, 2013). Local people are concerned about the large amount of land consumed by plantations and now also the two irrigation projects, together covering much of the northeastern corner of Kampong Chhnang province. There are also concerns about the potential

inequalities of water use and who will benefit from this irrigation initiative. The developers of the irrigation system clearly benefit from this project, and JICA's development projects are designed to benefit Japan as well as the developing countries. It is too early to tell whether, which, and how local people will benefit, and for how long, but they have already experienced land distributions that favour elite, well-connected individuals over local smallholders (Work & Beban, 2016), and plantation encroachment (Hunsberger et al., 2018; Khuan, 2012). Because the irrigation canal is just breaking ground, its impacts cannot yet be determined, but local people are concerned about having two irrigation projects on the same river and possible issues for downstream water availability, which is already showing signs of being compromised.

## 6. Conclusion

We present three case studies of CCMA projects that show consistent incidents of conflict with local communities, cooperation between powerful stakeholders, non-compliance with safeguards to the detriment of local communities, and a potential for maladaptation. The floodplains of the Tonle Sap Basin, on both the agricultural and the forested sides of the river, have supported a rich and biodiverse community of plants and animals (including humans) for a very long time. Through highly adaptive resource use, slipping from one strategy to the next as the landscape itself changes with the pulse of the flood cycle, human communities make their livings in intimate contact with their resources and communities of other species making a living off the productive system (Roberts, 2015). The ways that communities use these landscapes and the natural proclivities of the ecosystems themselves are difficult for project managers to quantify, visualize, and plan for (Scott, 1998), and new industrial and market based economic strategies disrupt this sustainable use. The policies of conservation, irrigation, and reforestation can oversimplify the complexity of the landscape and the livelihood possibilities. This simplification paints overly optimistic pictures of mitigation and adaptation (Käkönen, Lebel, Karhunmaa, Dany, & Try, 2014), which echo the unwarranted optimism of development projects in general.

Development's optimism masks the vulnerability it creates. Ribot (2014) situates this vulnerability as a condition of precarity that has been eliminated for some and exacerbated for others as part of colonial era and development projects. Precarity in the face of a hazard, like a flood, storm, or drought, becomes vulnerability. The social maladaptation (vulnerability borne of precarity) that we document here resulting from CCMA related projects, are the most recent phase of this project that entangles climate change responses with unaltered extractive development initiatives. Additional regimes of knowledge and resource control can increase precarity (Eriksen et al., 2015), and open opportunities for new international stakeholders to enter the lives of previously market-independent people. While the presence of international institutions can also make space for civil society to mobilize justice instruments beyond their national governments, as our JICA study confirms (see also Beban et al., 2017; Franco, Park, & Herre, 2017; Swift, 2015), accessing these mechanisms seems to depend on local level forces strong enough to confront national elites, development donors, and multinational companies with their own 'just standards' (Franco et al., 2017).

The idea that laws and policies can be drafted to uphold socially and environmentally just projects is an important component of contemporary climate change discourse. Accounting for CCMA project activities across development landscapes we encountered multiple and disparate activities and stakeholders, allowing us to clearly see that the associated problems are not isolated to one or two 'bad apples' but seem to be the rule rather than the exception. Further, these issues seem to be unaffected by safeguard policies, which often serve more to legitimize than control activities (Mosse, 2005). Through the informal relations between real people who execute projects, the 'power of informality', the case studies we present bring to light the fact that it is not just corrupt, patrimonial, and kleptocratic governments in the global south that write laws and policies only to ignore them in practice, but also international development donors, governments of developed nations, and corporations. But this is not the only driver of potential maladaptation, the CCMA policies themselves, intertwined as they are with an unchanged vision of development and the policy frameworks that support it, give rise to projects that are largely only discursively different from the development projects of the past.

Reforestation may be turned into the CCMA name for industrial tree plantations; irrigation systems have changed neither their objectives, nor their configurations, construction methods and processes, but are now helping to adapt to climate change; and fortress conservation initiatives now capture carbon. We face today new dangers from climate change projects and policies as much as we do from the effects of climate change itself. Our study makes clear that deep and broad changes, focused on environmental justice frameworks, are required to transform the current development model and ensure that CCMA initiatives are formulated into realistic policies and practices for a sustainable and just future.

## Notes

1. Fortress conservation refers to conservation projects that capture forest resources and restrict or exclude local use.
2. Note that some unresolved issues remain, like how water access will be equitably managed once the project is completed.
3. Initially, in the early 1990s, the logging in Prey Lang was selective for luxury timber. After 2004, logging included large-scale rubber, followed by sugar plantation and forest restoration projects. Currently, the luxury timber is logged out and logging consists of second and third grade timber and small-scale plantation clearing.

## Acknowledgements

The authors thank the participants of the CCMCC initiative, who commented on presentations of this paper, the research and advocacy team of the Mosaic Project in Cambodia and Myanmar, and the blind reviewers for their time and thoughtful attention.

## Disclosure statement

No potential conflict of interest was reported by the authors.

## Funding

Research was conducted with funding by the Netherlands Organisation for Scientific Research (NWO; grant number W07.68.416) and the United Kingdom's Department for International Development (DfID; grant number 07.68.416) as part of the Conflict and Cooperation in the Management of Climate Change (CCMCC) initiative.

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