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The political ecology of mangrove forest restoration in Thailand: Institutional arrangements and power dynamics

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ABSTRACT

Mangrove forest restoration is practiced across the (sub)tropics to suppress ongoing deforestation and degradation of coastal ecosystem services and biodiversity. This article critically assesses mangrove restoration policies and initiatives in Thailand, using a political ecology lens focussed on institutional arrangements and power dynamics. Analysis based on interviews with 44 respondents shows how formal and informal institutions created by weak actor relations can inhibit long-term success. Revealed are inconsistencies between national mangrove restoration policies and the financial capacity of the government agency tasked with policy implementation. This can create a reliance on private-sector funding via corporate social responsibility (CSR), which centres decision-making power with firms regarding how, where, and when mangrove rehabilitation is implemented. Loosely-defined national targets lead stakeholders to report 'false successes' based on the spatial area planted, rather than on the long-term survival rate of afforested or reforested mangroves. This creates a 'cycle of failure' with little institutional learning (i.e., feedbacks on the ecological reasons for failure), and duplicated rehabilitation efforts. The strong institution of corporate philanthropy in Thailand makes subsequent CSR money readily available, while coinciding restoration events with public holidays associated with the Thai Royal Family motivates local participants to try again. Contemporary narratives from two progressive mangrove rehabilitation projects – with long-term collaboration, cooperation, and monitoring – help identify recommendations for overcoming these long-standing institutional challenges. The article demonstrates how weak and unequal actor relations – resulting from capacity limitations, power asymmetries, and cultural ideologies – creates gaps between policy design and implementation, thus leading to ineffective environmental governance.

1. Introduction

> "*In Thailand, there has been tons of mangrove reforestation–we have seen project after project, company after company coming in to replant, and one after another they fail*" (Municipal Government Official, Chumphon)
>
> "*The total amount of mangrove seedlings that have been planted in Thailand could reforest the world*" (National Government Official, Bangkok)

Environmental governance comprises an array of interrelated actors, institutions, and interventions, and requires *inter alia* sufficient financing, administration capacity, knowledge sharing, and stakeholder participation to be effective (Armitage et al., 2012; Tiwari and Joshi, 2015). The creation, maintenance, and disruption of institutions remains paramount to governing the environment from international to local scales (Jespersen and Gallemore, 2018; Paavola, 2007). An institution is an established and shared pattern of formal or informal social behaviour, based on mutual expectations between actors (Aoki, 2007; Bathelt and Glückler, 2014). An 'institutional arrangement' is formed when multiple vertical and horizontal institutions co-evolve to shape, in this case, environmental governance (Aoki, 2007; Young, 2010). 'Horizontal' institutions are created through interactions between actors operating at the same level of social organisation (e.g., two national government agencies), while 'vertical' institutions are created between actors at different levels (e.g., a national corporation and local community).

Although institutional analysis has long focussed on complementarities between certain rules, norms, policies, and practices, it is also important to understand how and why inter-actor relations *produce* these rules, norms, policies, and practices in the first place (Ayana et al., 2017; Jespersen and Gallemore, 2018). The rationale is that strong and stable inter-actor relations will produce an institutional arrangement that is conducive to effective environmental governance. Each actor will play a unique role in shaping an institutional arrangement due to their individual remit, agency, motivation, and influence. Hence, while

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institutional analysis is important for examining environmental governance issues, it isn't flawless; as Fabinyi et al. (2014: 28) note, "overemphasis on institutions can create blind spots around issues of agency, which is unevenly distributed and largely about power". Power is conceptualised as the ability to make or influence decisions, and therefore, it is also important to scrutinize how power asymmetries between actors manifest decision-making processes, knowledge flows, and ultimately shape institutional arrangements in environmental governance (Ayana et al., 2017; Fabinyi et al., 2014; Powell and Osbeck, 2010).

Due consideration of institutional arrangements and power dynamics is increasingly advocated in studies on ecological restoration policies and practices (Borgström et al., 2016 Nigussie et al., 2018). This article critically assesses relationships between actors and institutions concerned with mangrove forest restoration and rehabilitation[1] in Thailand. Mangrove management typically involves multiple actors, operating at multiple governance levels, in contested spaces between land and sea – situations that can create conflicting policy objectives and implementation challenges (Afroz et al., 2016; Friess et al., 2016; Orchard et al., 2015; Thompson et al., 2018). Policies for mangrove rehabilitation have received particular scrutiny (Biswas et al., 2009; Dale et al., 2014), with Bosire et al. (2008: 255) stating, "most attempts to restore mangroves often fail completely, or fail to achieve the stated goals". While several rehabilitation methods are available, Brown et al. (2014) discuss how planting mangrove propagules (and transplanting seedlings) has become the "normative" approach, with 'failures' typically referring to low survival rates (Ellison, 2000; Kodikara et al., 2017; Primavera and Esteban, 2008). The ecological, hydrological, and biophysical factors leading to low survival rates have been widely reported; for example, species are often planted at the wrong intertidal elevation such as on mud flats which results in too much tidal inundation and drowning, or above the high tideline which results in drought and competition from terrestrial species (Kodikara et al., 2017; Lewis, 2005; Walters et al., 2008). Other factors include algal accumulation, invasion by barnacles, sediment smothering, and planting in high energy zones that hinder establishment (Bosire et al., 2008; Kodikara et al., 2017). Meanwhile, 'restored' mangrove monocultures are criticised for low biodiversity (Lewis, 2005), or being planted for timber/charcoal production (Ellison, 2000).

Crucially, the reasons for failed mangrove rehabilitation go far beyond these ecological factors, which neglect the inter-actor relations and institutional arrangements that determine how astutely ecological knowledge is used, and how credibly rehabilitation decisions are made. This requires identification of the political, financial, and socio-cultural factors that shape relationships between the actors and institutions involved (Biswas et al., 2009; Dale et al., 2014; Mangora, 2011; Powell and Osbeck, 2010). Scrutinizing these relationships can reveal underlying reasons for failure that can then be addressed; for example, weak actor relations due to limited communication and cooperation, or unequal actor relations due to power asymmetries, which may produce institutional arrangements that do not deliver long-term environmental outcomes, as seen elsewhere (Ayana et al., 2017; Nigussie et al., 2018; Tiwari and Joshi, 2015). This resonates with the scope of the current article. After contextualising mangrove management in Thailand (Section 2), and describing the methods (Section 3), the article is split into three main parts. The first part uses interview data to reveal institutional reasons why mangrove rehabilitation in Thailand is largely unsuccessful (Section 4), the second part balances this critique with contemporary accounts of two progressive and relatively successful mangrove rehabilitation projects in the Gulf of Thailand (Section 5), and the third part offers pragmatic recommendations to improve institutional arrangements and reduce power dynamics (Section 6); conclusions follow (Section 7). The objectives are to:

1 Scrutinize the relationships between actors and institutions that can lead to unsuccessful mangrove rehabilitation in Thailand, focussing on political, financial, and socio-cultural factors;
2 Investigate how two recent mangrove rehabilitation projects in Thailand have overcome some of these institutional challenges;
3 Recommend improvements for mangrove rehabilitation in the context of actor relations, institutions, and practices.

2. Mangrove management in Thailand

Estimates of change in Thailand's mangrove area over the second half of the last century show high variability, with an average annual loss of 0.71% (Friess and Webb, 2014). This deforestation was largely driven by conversion to shrimp aquaculture (Barbier and Cox, 2004; Martinez-Alier, 2001) and establishment of charcoal concessions (Moriizumi et al., 2010), while coastal erosion remains a current threat (Thampanya et al., 2006). However, between 2000–2012, average annual mangrove loss in Thailand was only 0.11%, which is among the lowest rates in Southeast Asia (Richards and Friess, 2016). Encouraging figures such as these are often due to contemporary policies that promote mangrove conservation, restoration, and address the drivers of mangrove loss, e.g., by promoting aquaculture intensification rather than expansion (Feller et al., 2018; Hishamunda et al., 2009). Indeed, in-line with conservation efforts to slow mangrove deforestation (Pongthanapanich, 2010) and intensify aquaculture (Lebel et al., 2002), Thailand has drafted policies and set goals to restore and rehabilitate mangrove forests across the country. These stemmed from the ratification of international environmental conventions, a rise in environmental consciousness in the 1990s (Field, 1999; Memon and Chandio, 2011), and increased awareness of how mangrove deforestation can reduce ecosystem services, biodiversity, and impede the livelihoods and wellbeing of coastal communities (Sathirathai and Barbier, 2001). Mangrove restoration activities increased further following the 2004 tsunami, based on the rationale that mangroves help protect coastlines (Barbier, 2006).

Strategies and targets for mangrove restoration have been stipulated in Thailand's recent National Economic and Social Development Plans (NESDPs), which aim to direct and coordinate public expenditures towards development programs (Ongprasert, 2011). The 11th NESDP (2012–2016) targeted "At least 5000 *rai* [800 ha] per year of mangrove coastal reforestation". More recently, the 12th NESDP (2017–2021) featured the following goal, "The mangrove forest area is enlarged from 1.53 to 1.58 million *rai*" – an increase of 8000 ha over five years. These mangrove targets stem from a national goal to have 40% of all forested area inside national parks, with the current area around 33% (Ongprasert, 2011). As part of this goal, the 1992 Reforestation Act was drafted to encourage private sector investment in forest restoration (Ongprasert, 2011). Also notable is the recent 'Get Back Forest' policy operated by Thailand's Ministry of Natural Resources and Environment (MONRE) and the Thai Military, which evicts illegal settlers, businesses, or any other land occupier from degraded land that can then be rehabilitated.

Akin to other countries in Southeast Asia, mangrove management in Thailand has historically been governed by numerous laws and overseen by several ministries and departments (IUCN, 2007), including the Department of National Parks, Wildlife and Plant Conservation (DNP) and Royal Forest Department (RFD). However, since its establishment in 2004, mangrove conservation and rehabilitation efforts have been led by the Department of Marine and Coastal Resources (DMCR), which is under MONRE. DMCR is split into two branches: marine (covering

[1] While these two terms are sometimes used interchangeably, mangrove *restoration* aims to ambitiously recreate the original (often pristine) state, while mangrove *rehabilitation* aims to merely recover some of the degraded ecosystem's functions and services (Walters et al., 2008). Selecting the right term is important for managing expectations, setting goals, and monitoring outcomes of related policies and projects (Dale et al., 2014).