



Mangrove allocation for coastal protection and livelihood improvement in Kien Giang province, Vietnam: Constraints and recommendations



Nguyen Tan Phong^{a,b,*}, Thai Thanh Luom^b, Kevin E. Parnell^a

^a Centre for Tropical Environmental & Sustainability Sciences, James Cook University, 4811, Australia

^b The Kien Giang University, Chau Thanh District, Kien Giang Province, 920000, Vietnam

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ABSTRACT

A management policy adopted by the Kien Giang Province, Vietnam, is to allocate mangrove areas using contracts with local community members who are dependent on mangrove resources for both mangrove protection and livelihood improvement. However, community members have not made the best use of the allocated areas, and mangroves have not been well protected. The policy is due to be revised in late 2016, as is legally required. This study used mixed methods to review the policy and its implementation with respect to mangrove protection requirements and use of mangroves for livelihood improvement and to provide recommendations for sustainable mangrove management in Kien Giang. The policy and its implementation is demonstrated to be a constraint to achieving its goal. Limited understanding of the policy of contractees resulted in ineffective and inefficient aquaculture and mangrove protection in almost all areas. Permitted thinning and selective harvests led to the creation of substantial gaps and disconnections in the established mangroves, making the entire coastline vulnerable to coastal erosion. Improper technical guidance on the configuration of mangrove allocations, and mangrove protection and transplantation methods resulted in the mangrove protected areas being fragmented and vulnerable to erosion. Permitted thinning and selective harvest practices should be reviewed to ensure adequate resilience and protection of mangrove areas, especially on critically eroding areas. Proper law enforcement should be put in place to ensure contracts are adequately implemented. Allocation and/or transfer of areas less than 1 ha must be discontinued in the future to avoid further defragmentation and degradation. Technical guidance on configuring allocated mangrove areas should be established and incorporated into the updated policy that would help improve the effectiveness of the policy, and address problems relating to strengthening resilience and protection of mangrove areas in Kien Giang Province, Vietnam.

Similar programs using mangrove area allocation to individuals and households in response to mangrove area loss exist elsewhere in the Mekong delta. Understanding the reasons for the very limited success of the Kien Giang program and local co-investigation in drawing lessons learnt can help guide other similar programs elsewhere in the Mekong Delta region.

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1. Introduction

Mangrove environments, faunally and florally important habitats (Manson et al., 2005; Nagelkerken et al., 2008), can provide income sources for communities dependent on mangrove resources (Gilbert and Janssen, 1998; Walters et al., 2008). Mangroves provide a degree of protection from coastal hazards (Das and

Vincent, 2009; Granek and Ruttenberg, 2007), assist in dissipating wave energy (Hashim and Catherine, 2013), sequester organic carbon (Comeaux et al., 2012), maintain water quality (Wong et al., 1997; Wang et al., 2010), and assist in adapting to sea level rise (McIvor et al., 2013).

Mangrove loss worldwide (Duke et al., 2007) has been caused by human induced and natural factors (Han, 2002; Bao and Healy, 2002). In recognition of important mangrove values and functions, governments and local stakeholders around the world make efforts to protect and restore mangrove ecosystems (Kamali and Hashim, 2011). In some instances, local communities dependent on mangrove resources have been involved in formulating and imple-

* Corresponding author at: Centre for Tropical Environmental & Sustainability Sciences, James Cook University, 4811, Australia.

E-mail address: phong.nguyen@my.jcu.edu.au (T.P. Nguyen).

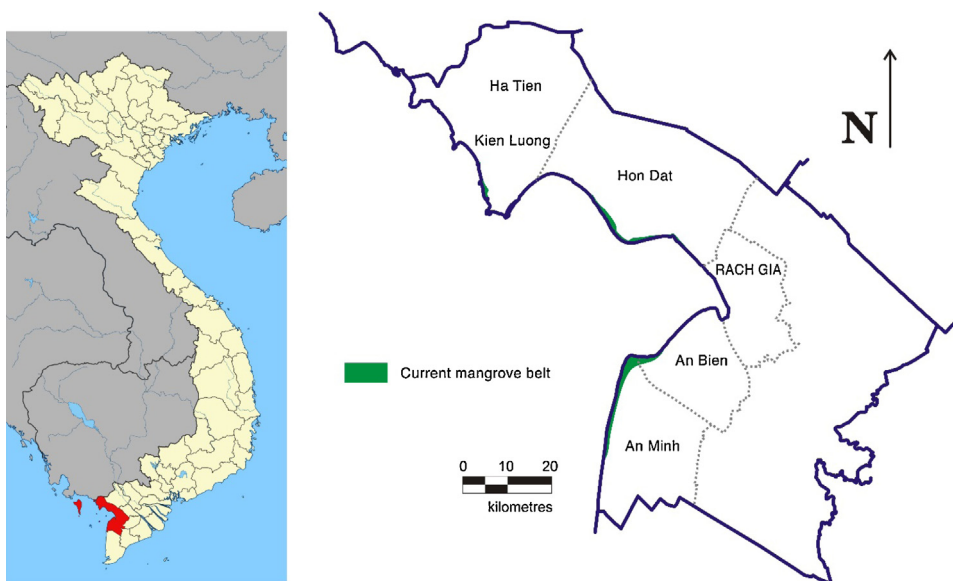


Fig. 1. Kien Giang location and current mangrove areas.

menting sustainable management practices through community based management projects, where rights, authority and responsibilities are decentralised to local communities (Alcorn et al., 2002).

Coastal development including conversion of mangrove areas for agriculture and aquaculture has led to a significant decrease in mangrove area over the past 50 years in Vietnam (Sam et al., 2005). The Vietnamese government has instituted many laws and national strategic action plans that assist in protecting current mangroves, examples being the Forest Protection and Development Law in 2004 (Vietnamese National Assembly, 2004) and the Vietnam Forestry Development Strategy for the period between 2006 and 2020 (Vietnamese Prime Minister, 2007). A management mechanism adopted in 2001 by the Vietnamese government is to allocate forests to local community members who are dependent on forest resources, for forest protection and livelihood improvement (Vietnamese Prime Minister, 2001).

In 1992, most of the Kien Giang coastline (Fig. 1) was legally protected with the establishment of the coastal mangrove protected area, including areas used for aquaculture. Between 1999 and 2000, two Management Boards: Kien – Hai – Ha Management Board and An Bien Management Board were established to manage the Kien Giang coastal mangrove protected areas. As clearly stated in the Vietnam Law on Forest Protection and Development (Vietnamese National Assembly, 2004), Kien Giang Coastal Mangrove Protected Areas are classified as Protection Forests. Human activities in ‘Special Use and Protection Forests’ need permission from competent government agencies. The 2001 forest allocation program introduced by the Vietnamese Prime Minister was initially implemented by a policy of Kien Giang Province in 2005. The 2005 policy legally permitted local coastal communities to be involved under contracts in coastal mangrove protection in return for livelihood improvement. Under this policy, 70% of an allocated area must be protected in return for the right to use 30% of the allocated area for aquaculture for income, with a condition that the activities pose no threat to mangrove resources (Kien Giang PPC, 2005). Under a contract (valid up to 50 years) issued by the Management Boards (contractors), households, organizations, and individuals residing in Kien Giang Province (contractees) were allocated mangrove areas in the secondary mangrove belt (the primary belt being the most seawards) to provide for coastal protection and for producing income. Contractees are also entitled to collect products of thinning and selective harvests of full grown individual trees of *Rhizophora apic-*

ulata in the 70% protected area for sale for additional income (Kien Giang PPC, 2005). Similar mangrove allocation policies were issued by other coastal provinces in the Mekong delta region such as Ben Tre Province (Ben Tre People’s Council, 2013) and Ca Mau Province (Ca Mau Provincial People Committee, 2013).

The 2005 policy and its implementation were reviewed by Department of Agriculture & Rural Development of Kien Giang (DARD) as was legally required in 2010. The 2010 review showed that there were 2056 household contractees and 6,507.87 ha allocated. Approximately 30% of the contractees were allocated areas of less than 1 ha, with 20% allocated areas of more than 3 ha. Only 40% of the contractees implemented aquaculture on the 30% permitted areas. The reasons given for this low uptake were insufficient investment capital, small allocation areas, high investment costs and low returns from aquaculture (DARD, 2010a). As a result of the 2010 review, a new policy was issued in 2011, updating the 2005 policy. The 2011 policy continued to promote coastal mangrove allocation for livelihood improvement (30%) and mangrove protection (70%) for adaptation to climate change, coastal erosion and sea level rise. Sea levels have been projected to increase by at least 65 centimetres over the next 100 years in the lower Mekong Delta region (Ministry of Natural Resources and Environment of Vietnam, 2010; Asian Development Bank, 2013). Hon Dat, one of the coastal districts of Kien Giang Province, experienced sea level rise of approximately 20 cm over the past 50 years (Ministry of Natural Resources and Environment Vietnam, 2009). The 2011 policy also amended the responsibilities of and benefits to contractors and contractees, and provided detailed guidelines on permitted thinning and selective harvests (Kien Giang PPC, 2011). Since then, new contracts have been issued and previous contracts have been legitimately renewed.

In 2013, the Conservation and Development of the Kien Giang Biosphere Reserve Project (CDBRP) undertook a study that aimed to document mangrove based aquaculture incomes and associated earnings that contractees gained from aquaculture activities on their allocated coastal mangrove areas in Kien Giang Province, Vietnam (CDBRP, 2013). 75% of contractees did not comply with the requirements of the 2011 policy in relation to the use of the 30% permitted areas for aquaculture (CDBRP, 2013). However, the reasons for not complying with the policy requirements have not been adequately documented. In 2009, 30% of the 208 kilometre coastline of Kien Giang was reported as being severely eroded (CDBRP,

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