



Sustainable management of mangrove forests in West Africa: A new policy perspective?



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ABSTRACT

Mangrove resources are extensively harvested by urban-dwellers and rural community members across West Africa. It is un-known how current legislation and policy tools used to manage this ecosystem influence its sustainability in West Africa. However, current practices of mangrove wood harvesting are affecting the sustainability of this ecosystem. This paper explores literature to identify government institutions and legislations under which mangrove forests are managed, and critically analyzes the capacity of these institutions and regulations in promoting the sustainability of mangroves forests. The paper further uses mangrove wood harvesting and mangrove forests projects as case studies to assess the appropriateness of these legislations, enforcement and contribution to mangrove forests sustainability in West Africa.

Results indicate there are too many institutions, with devolved roles and responsibilities charged with the management of mangrove forests. Countries of the region have ratified several international conventions and are using associated national natural resources legislations to support mangrove forests management. However, mangrove wood harvesting practices and patterns are almost un-regulated across these countries. Mangrove wood harvesting is strongly influenced by gender type, physical strength and market forces, rather than existing legislations under which mangroves are managed. Government institutions have partnered with national and international NGOs to implement projects that are contributing to alleviate anthropogenic pressures from mangrove forests. This marginal performance is the result of limited logistic capacity, lack of sustained financial resources, inappropriate legislations, policies, and lack of political interest, coupled with lack of data on the economic value of mangrove forests across countries of the region.

Mangrove forests thus deserve appropriate regulations and policies that consider their socio-economic and ecological peculiarities. Such legislations should highlight economic incentives that promote ecosystem conservation; and management systems with good governance indicators that measure and promote ecosystem health and stakeholders' interests.

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1. Introduction

Mangroves are complex assemblages of microscopic and macroscopic fauna and flora species; heightened by facultative evergreen plants that form forests. These plants establish along or close to rivers, intertidal areas, bays, estuaries, lagoons and/or creeks in areas between land and open oceans in tropical and subtropical regions of the world. Mangrove forests occur in 123 countries worldwide covering a surface area of 145,000 km² (FAO, 2007; Spalding et al., 2010). The occurrence of mangroves is

influenced by tidal regimes and certain water parameters, while its geographical distribution is influenced by temperature and salinity levels (Tomlinson, 1986). Mangroves are of enormous socio-economic and ecological importance; the essences of which are extensively documented (Dahdouh-Guebas et al., 2005; UNEP, 2007; Waters et al., 2008; de Lacerda, 2002; UNEP, 2014). Regardless of these recognized values, mangroves forests are the most threatened tropical ecosystems, and are being degraded and depleted globally at alarming rates (Alongi, 2002; Polidoro et al., 2010). It is anticipated that an additional 25% of mangrove forests in developing countries could be lost by 2025 (McLeod and Salm, 2006). These changes are already impacting the fauna, flora and an ecological process of West African mangroves; and it is

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anticipated that the effects of these changes on coastal communities will be far-reaching (Abe et al., 2000; IPCC, 2001; UNEP, 2007). There are many identified factors, driving mangrove forest deforestation in West Africa (Feka and Ajonina, 2011). Mangrove wood harvesting by the urban poor and rural communities is one of the most important direct drivers of this change across this region (Doldman et al., 2006; Ukwe et al., 2006). As a result of these combined factors, about 30% of mangrove forest cover were lost in West Africa over a period of twenty six years from 1980 to 2006 (UNEP, 2007).

Against this declining state of mangrove forests in the region, effective measures need to be employed to avoid socio-economic and ecological disasters. Effective and efficient management of natural resources, such as mangrove forests require carefully thought and experimented management practices and rules (FAO, 1994; FAO, 1998). Such management systems need to be designed in such a way that will ensure continuous safeguard of mangrove forests services, while optimizing resource use (FAO, 1998; Hughes and Flintan, 2001). To develop such systems, data/information should be collected to understand human population distribution around the resource area, climatic parameters, edaphic, hydrological dynamics other biotic factors, distribution of mangrove forest resources, species composition, resource use patterns and model how all these information collectively affect ecosystem sustainability; including traditional and potential uses, and the socio-economic value of mangroves to communities (stakeholders) dependent on these resources (Dahdouh-Guebas, 2001). While this information/data is also essential to understand the productivity of mangroves and also set sustainable use levels both at the societal and ecosystem level, such data is exceedingly scarce for most coastal African countries, (FAO, 1994; UNEP, 2007) and is outside the scope of this study. When available, such information forms the cornerstone for developing mangrove forests management systems as it is fed into appropriate frameworks to evaluate and predict sustainable use rations, patterns, cycles and hence sustainability options. There are many tools and approaches to developing and implementing sustainable management of forest resources (FAO, 1994; World Bank et al., 2005; Primavera and Esteban, 2008). Regardless of the approach, the effectiveness of a sustainable management system is dependent on the active involvement of all stakeholders including; local communities, local and national administration, corporate institutions as well as institutions directly or indirectly dependent on coastal resources (Primavera and Esteban, 2008). A successfully managed natural resource, such as a mangrove forest brings along benefits, such as biodiversity conservation, environmental protection, social equity, community development and responsibility amongst stakeholders (FAO, 1994). One of the fundamental ingredients for a successfully managed management system, is the existence and applicability of legislation [rules of law and enforcement] (Van Lavieren et al., 2012). Such laws are usually accompanied by specific policies and/or related guiding principles, which directs on how the laws should be applied at various levels to deliver sustainable resource management outcomes.

Generally, natural resources policies and legislation are arguably more effective in the developed countries (Kolhoff, 2008). On the other hand, about 76% of the world's land resources occur in developing countries, and close to 80% of the populations from these countries depend almost entirely on natural resources for their basic subsistence and count on it for posterity (OECD, 1998). It is therefore clear that the significance of effective legislation and policy making and implementation in the developed countries will only make impact if efforts are intensified in developing countries to promote effectiveness (Wood, 2003). Developing

countries have embraced legislation and policy making for natural resource management for more than three decades (Wood, 2003). However, mangrove forest legislation and policy guidelines are only developed in a few developing countries such as Brazil, Philippines and Thailand amongst others (See World Bank et al., 2005). Such legislations are almost in-existent for most African countries (FAO, 1994), most particularly West and Central African countries.

Legislation and policies are pivotal in the management of natural resources (FAO, 2010), and it has been demonstrated that continued degradation and depletion of mangrove forests globally is the outcome of high-levels of policy indecision and failure to enforce protective measures (FAO, 2007; Van Lavieren et al., 2012). Because of the value of these management tools, it is essential to understand and identify limitations of exiting legislations and/or policies, in order to recommend and/or improve these management tools (Braat and Brink, 2008). Moreover, with increasing scientific knowledge and understanding of the roles mangrove forests could play in climate change regimes (Dahdouh-Guebas et al., 2005; Herr et al., 2011; Alongi, 2014), it is essential to identify how existing institutions and policies are faring in order to inform and improve prospective mangrove legislation and policy reforms in West Africa.

There is a generalized rhetoric that ineffective management of natural resources in developing countries is linked to poor behaviors and governance deficiencies of institutions that facilitate legislation and policy making and/or implementation (Vog, 2008). A number of studies have established understanding on how mangrove forests are managed in West-Central Africa (Kjerfve et al., 1997; Macintosh and Ashton, 2003; UNEP, 2007). However, such information remains fragmented, generalized and unequally distributed across countries. Moreover, important information on mangrove ecosystem services valuation remain limited to tangible mangrove forest products such as wood only. Studies' examining how existing legislations and policies are used to ensure mangrove forest sustainability across countries of the region is scarce or nonexistent (Doldman et al., 2006; Ajonina, 2010). As it stands, current management of mangrove forest is traditionally assimilated under various natural resources regulations and institutions in West and Central Africa (Kjerfve et al., 1997; Dodman et al., 2006). This encapsulation under wider natural resource legislative and policy regimes might have implications on the sustainability of mangrove forests, and current knowledge on this is scarce. Moreover, it is imperative that developing countries without specific mangrove forests legislation and/or policies should urgently develop and adopt general policies for the protection, conservation and rational utilization of mangrove resources (CEC, 1992).

This study thus aims to contribute to improve legislation and policy making for the sustainable management of mangrove forests. Specifically, the study will 1) review how existing government institutions, legislations and policies are currently contributing to sustain mangrove forests in select countries of West Africa, 2) use mangrove wood harvesting as a case study to elucidate; harvesting practices and patterns as a proxy for legislation and policy enforcement and development, 3) review and assess how a select number of conservation projects across these countries are contributing to mangrove forest sustainability and determine preliminary indicators for good governance of mangrove project sites. It is anticipated that the results of this study will be particularly useful to; improve prospective mangrove ecosystem legislation and policy making, government institutions involved in management reforms, and mangrove project managers supporting policy development and reforms in the region.

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