



Decentralization and participation in integrated coastal management: Policy lessons from Brazil and Indonesia

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ARTICLE INFO

Article history:

Available online 11 May 2012

ABSTRACT

Indonesia and Brazil, two large countries with long coastlines, have seen dramatic political changes over past decades. The New Constitution of 1988 in Brazil and the reform movement of 1998 in Indonesia both marked the beginning of a new political era in the respective countries. An important pillar of this was the decentralization of authority. At the same time, the notion of integrated coastal management found its way into national legislation and policies. Key terms during these new eras in both Brazil and Indonesia are decentralization, participation, democratization and, in the context of coastal management, integration. Despite the enactment of promising new laws and policies, and despite local examples of success, implementation still faces a number of challenges in both countries. Inefficiencies and weaknesses of the institutional and legal frameworks have resulted in local mismanagement and misappropriation, a high degree of non-compliance, conflicts between resource users and tension and mistrust between different levels and sections of government. Moreover, the disempowered situation of poorer local ecosystem users largely continues. We argue here that for coastal management to become socially more just and environmentally more benign, local communities need to be better informed, capacitated and officially supported in their quest to protect the ecosystems which their livelihoods depend on. Local ecosystem users' social energies and capacities may be essential to respond to ecosystem stakeholders which do not share local ecosystem users' sustainability agendas.

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1. Introduction

Increasing awareness of anthropogenic impacts on coastal ecosystems and their local users and the emergence of growth-with-equity strategies have triggered changes in environmental governance in many parts of the world. With the growing recognition of threats such as climate change, the notion of sustainable development and the concept of Integrated Coastal Management (ICM) have been incorporated into coastal policies and management approaches worldwide. Consequently, many developing and former communist countries engaged in the decentralization of authority in order to increase government accountability and efficiency, and to strengthen the role of local communities in natural resources management (Jose, 2002).

Indonesia and Brazil are two large countries with long coastlines and highly diverse ecosystems. Indonesia is an archipelagic nation with a coastline of 81,000 km (Siry, 2007). Its about 17,500 islands

differ greatly in climate, geography, cultures, and economic activities. Its coastline is fringed with mangrove forests, coral reefs and sea grass beds that are extremely rich in biodiversity and have a high degree of endemism (Sukardjo, 2002). With a total area of 51,020 km², Indonesia is endowed with about one-fifth of all coral reefs worldwide (Dutton et al., 2009). Brazil has a coastline of 7500 km, presenting a variety of tropical and sub-tropical ecosystems and habitats. The Atlantic Forest (Mata Atlantica) is considered the most important coastal ecosystem stretching across large parts of the country. Mangroves occur along most of the Brazilian coastline, covering an area of about 25,000 km². Coral reefs are confined to the tropical zone of the country's coast and offshore islands. Biological diversity in these coastal ecosystems is exceptionally high and includes a number of endemic and endangered species (Diegues, 1999).

In both countries, competition over increasingly scarce resources, deteriorating environmental quality and growing human population are pressing issues. In Indonesia, an estimated 60% of its about 250 million inhabitants live in coastal areas (Siry, 2007). The main coastal pressures arise from population growth, urbanisation, pollution, and exploitation of natural resources (Kusuma-Atmadja and Purwaka, 1996). Overfishing, illegal fishing methods and the

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destruction of coral reefs and mangroves are major threats to the viability of coastal ecosystems (Siry, 2007). In Brazil, around 36.5 million people, a fifth of the population, live in coastal areas (World Bank, 2006). Brazil's coastal ecosystems have suffered from severe degradation since the beginning of intensive industrial production in the 1950s. Particularly areas of high urban and industrial concentration are highly polluted and degraded (Diegues, 1999).

Traditional and other marginalized populations that inhabit coastal areas in Indonesia and Brazil are particularly affected by the degradation of coastal forests or reefs since their livelihoods most critically depend on these ecosystems. These coastal communities associate a range of economic, social and cultural values with the ecosystems that surround them. Ecosystem degradation has often impoverished them and disrupted their culture (Diegues, 2002, 2005). Although coastal areas also receive high rates of immigration and can thus be characterised by 'ecological illiteracy' among migrant populations whose knowledge relates other natural environments (Krause and Glaser, 2003a,b), such non-traditional coastal ecosystem users can possess or develop relevant system knowledge and develop customary governance systems of their coastal resources (Diegues, 1999; Siry, 2006; Glaser et al., 2010a).

In large and diverse countries, centralized management is associated with high levels of bureaucratisation and costs, delays in decision-making and communication problems (Siry, 2007). As a result, decentralization became a key component of the move toward democratization in Brazil and Indonesia. With a high degree of parallelity, both the New Brazilian Constitution of 1988 and the Indonesian reform movement of 1998 marked the beginnings of a new political era. The legal changes undertaken were widely associated with a transformation from autocratic rule to more democratic principles and heavily affected coastal zone management policy (see Table 1). Key terms among the official guiding principles for the policy shift in both countries were democratization, decentralization, participation, sustainability and Integrated Coastal Management (ICM).

This paper presents a comparative analysis of recent policy developments in coastal management and particularly of the outcomes and challenges arising around the participation of direct ecosystem users in the management of coastal ecosystems. The question of how the participation of local ecosystem users is affected by the decentralization of coastal management is central in our analysis. We have reviewed legal documents, policy plans, related secondary literature and included the long experience of the authors in both regions which has involved the participation in a series of science-policy workshops in Brazil between 1995 and 2006 and in Indonesia between 2006 and 2010. In this article, we summarize the achievements and implementation challenges of coastal management policies in Brazil and Indonesia, review important political developments in both countries and put these in the context of their stated objectives. Major obstacles that Indonesia and Brazil, along with many other countries, are facing in the implementation of coastal management are then discussed. Our main concern is to analyse the effect of decentralization on ecosystem user participation in marine and coastal management. Our findings are meant to support and inform ICM policy and decision-makers.

2. Legal and policy changes in Brazil and Indonesia

2.1. Conceptual framework

Democratization was the driving force behind the reform movements in many countries during the 1980s and 90s. With the emergence of growth-with-equity development strategies in the

70s, and the call for greater democratization, accountability and transparency in the 80s and 90s, a great number of developing countries thus decentralized their government apparatus as part of a quest for more democracy, efficiency and equity.

Generally, decentralization efforts were triggered by inefficient and centralized government bureaucracies that were unable to deal effectively with increasingly complex societies causing socially and environmentally undesirable outcomes by classical top-down approaches to decision-making. In contrast, decentralized governance systems were assumed to "encourage local authorities to serve the needs and desires of their constituents" (Satria and Matsuda, 2004) through democratic processes. It was assumed that the lower levels of government are more likely to serve local needs because of the greater social proximity between policy makers and the people (Seddon, 1999). However, decentralization comprises many theoretical facets and takes various forms in practice. For this article, decentralization is understood as present in any act in which a central government formally transfers/cedes powers to actors and organisations at lower levels in a political-administrative and territorial hierarchy (Satria and Matsuda, 2004; Ribot, 2001).

Public participation has become a keyword in the decentralization debate. Decentralization is not only seen as a means for enhancing the role of lower levels of government, but it is also perceived to create opportunities for the empowerment of civil society including local user communities in managing natural resources through the inclusion of local non-government stakeholders. Thus, it is often stated that decentralized coastal management enables communities to be actively involved in planning and management (Larson and Ribot, 2004). Despite this frequent association, it is important to highlight that although decentralization may promote public participation and even though the prevailing political rhetoric in many countries, including Brazil and Indonesia strongly emphasizes this association, decentralization relates to change within government systems, and does not *per se* lead to a higher degree of participation of local non-government stakeholders. Govan et al. (1998) differentiate public participation into three levels of involvement: 1) passive involvement, where community members are merely informed on decisions taken by the authorities, 2) consultative involvement, where stakeholders are given limited opportunities to express their concerns, and 3) active involvement, which enables participants to take decisions and take over management and planning responsibilities.

Integrated Coastal Management (ICM) is an essential part of sustainable development practice and a dominant paradigm in coastal management (Sorensen, 1993). ICM involves management measures that relate to the feedbacks between economic, ecological, social and natural variability over time and space in order to allow for ecosystems and the human societies they support to exist side by side. It embraces a number of principles such as sustainability, participatory planning and management, and holistic and adaptive management (Cicin-Sain and Belfiore, 2005). The consistency of implemented measures with the coastal human–nature complex as a whole is another fundamental element of ICM. Since ecosystems are a matter of concern to various actors in coastal zones and have to support a plurality of resources and uses, coordination between these actors is a crucial part of ICM (FAO, 1998). The common focus on cooperation, participation, local management and institutional embeddedness highlights complementarity between ICM and decentralization.

2.2. Objectives of policy changes in the ICM framework

The key objectives and guiding principles behind many laws and policies of the era of reform and political change in Indonesia and

Table 1
Key developments in coastal management in Brazil and Indonesia.

Brazil
1988
New Federal Constitution
<ul style="list-style-type: none"> • Establishes the coastal zone as national heritage. • Provides the foundation for decentralized natural resource management. • Contains explicit environmental protection goals.
National Plan for Coastal Management (PNGC) (established in 1988, revised in 1997 and 2004)
<ul style="list-style-type: none"> • Provides a framework for integrated, decentralized, and participatory coastal management. • Defines policy tools (e.g., Federal Coastal Zone Plan of Action, State and Municipal Coastal Management Plans, an Information and Environmental Monitoring System, the Environmental Quality Report, and Ecological-Economic Coastal Zoning). • Regulates the licensing of activities that potentially impact the coastal environment, and provides regulations for environmental impact reports.
Since 1990s
Coastal extractive Reserves (RESEX) officially established
<ul style="list-style-type: none"> • Aim to protect nature through resource use. • Protect the livelihood conditions of traditional populations. • Aim to integrate traditional ecosystem users into national development.
2002
National System of Conservation Units (SNUC)
<ul style="list-style-type: none"> • Provides the legal framework for different categories of protected areas.
Special Secretariat for Aquaculture and Fisheries (SEAP)
<ul style="list-style-type: none"> • Aims to provide resource management assistance and socioeconomic support to fishing communities. • Develops capacity to plan and manage fisheries, including artisanal fisheries.
Indonesia
1997
General legislation of environmental management
<ul style="list-style-type: none"> • The Environmental Protection Act No. 23/1997 aims to promote environmentally sustainable development. Natural resource management is under the authority of the central government.
1999
Decentralization legislation
<ul style="list-style-type: none"> • Autonomy Act (No. 22/1999) and Financial Distribution Act (No. 25/1999), revised in 2004 (Acts 32 and 33). • Establishes a decentralized coastal zone under the jurisdiction of local and regional governments. • Devolves wide-ranging responsibilities for the management of coastal and marine resources to local and regional governments.
Ministry of Marine Affairs and Fisheries (MMAF) established. Responsibilities of MMAF
<ul style="list-style-type: none"> • Establishment and monitoring of the regional autonomy implementation plan; • Management and implementation of plans for the protection of marine resources within 12 nautical mile (nm) zone; • Setting authorisation/licensing standards; • Dispute resolution between provinces; • Exploitation, conservation, and management of marine resources beyond the 12 nm zone, extending to the Exclusive Economic Zone of Indonesia; • Policy formulation and regulation of sea borders; and • Setting standards for shoreline, coastal and small islands management.
2004
Enactment of Fisheries Act
<ul style="list-style-type: none"> • Provides the legal basis for fisheries management. • Prohibits the use of destructive fishing methods. • Incorporates economic and environmental interests.
2007
Enactment of the Coastal and Small Island Management Act
<ul style="list-style-type: none"> • Sets a framework for coordination, integration, and consistency in management and planning decisions. • Provides general regulations relating to administration and implementation, such as monitoring and evaluation, conflict resolution, and funding. • Encourages decentralized, community-based coastal management schemes.

Brazil are democratization, decentralization, public participation, integrated management and sustainability. The two key policy instruments to implement the ICM framework in Brazil and Indonesia incorporate these key principles. The main objective of the Brazilian National Coastal Management Plan (PNGC) is “to plan and manage the socioeconomic activities on the coast in an integrated, decentralized and participative manner, in order to guarantee the use, control, conservation, protection, preservation and recuperation of natural resources and coastal ecosystems” (Barragán Muñoz, 2001). The Indonesian Integrated Coastal and Small Islands Management Act of 2007 (so-called ‘RUU Pesisir’ or ‘Law 27’) adopts the principles of sustainability, integration, decentralization, accountability, justice, equity, and societal participation. It promotes decentralized and participatory ICM to improve coordination, integration, and consistency in management and planning. The reform-era coastal management legislation and policies in both Indonesia and Brazil thus clearly demonstrate the intention to encourage decentralized, participatory and integrated coastal management. How then, have these stated objectives been met and what are the implementation challenges and obstacles Brazil and Indonesia have faced?

2.3. Related legal changes

2.3.1. Brazil

For Brazil, the new National Constitution of 1988 was a landmark in an environmental policy and decentralized natural resources management. After decades of centralized authoritarian rule guided by the pursuit of economic growth and with little consideration for social equity and sustainability (Bunker, 1985), environmental protection and sustainability were formally adopted. The 1988 National Constitution decentralized Brazilian federalism, and laid the foundation for a new legal and institutional framework for coastal management. For the first time, the coastal zone was specifically named as part of Brazilian National Heritage (Barragán Muñoz, 2001).

In 1987, a year before the enactment of the new Constitution, an Interministerial Commission for Marine Resources (CIRM) formulated a National Coastal Management Programme (GERCO), leading to the promulgation of Law 7.661/88 which established the PNGC as the legal base for the integrated, decentralized, and participatory management of coastal natural resources and ecosystems (Belchior, 2008). The PNGC was developed as the framework for state and municipal coastal management policies, plans and programmes. It regulates the licensing of activities that potentially impact on the coastal environment and provides regulations for environmental impact reports. In 2004, Decree 5300 defined the instruments for implementing coastal zone management. The PNGC provides participatory planning mechanisms for the development of management plans with ecosystem users and other sections of civil society (Glaser and Krause, 2005). While the Federal Ministry of the Environment remains the coordinating body, planning and implementation responsibilities are decentralized to the regional and local level. The management of the coastline, defined as the coastal strip demarcated on the marine side by 10 m depth, and on the terrestrial side by a line of 50 m in urban areas and 200 m in non-urban areas from the tidal line or the inland ecosystem boundary, falls under municipal jurisdiction (Jablonski and Filet, 2008). Shoreline intervention plans were devised as participatory planning support tools to regulate the use and occupation of the coastline. In addition to the PNGC, a Federal Coastal Zone Plan of Action, State and Municipal Coastal Management Plans, an Information and Environmental Monitoring System, the Environmental Quality Report, and

Ecological-Economic Coastal Zoning procedures were established as key implementation tools.

The development of the National System of Conservation Units (SNUC, for Sistema Nacional de Unidades de Conservação da Natureza) was adopted in 2000. The SNUC defines the management framework for all categories of protected areas in Brazil: the Environmental Protection Areas (APA), Category II Multiuse Reserves, and Category III Sustainable Development Reserves (RDS) (World Bank, 2006). This entails two categories of conservation units. First, absolute protected areas, or indirect-use conservation units which include ecological stations, biological reserves, parks, natural monuments, and wildlife refuges. Second, sustainable use areas or direct-use conservation units. These comprise environmental protection areas, areas of significant ecological interest, national forests, extractive reserves, fauna reserves, sustainable development reserves, and private reserves of natural heritage (including Marine Reserves for Sustainable Development [MRSD] and Marine Extractive Reserves [MER]) (UNEP-WCMC, 2008).

2.3.2. Indonesia

In Indonesia, the reform movement of 1999 set off ambitious changes in national law. The Autonomy Act (Laws 22 and 25/1999, later revised as 32 and 33/2004) delegated wide-ranging decision-making and management responsibilities to local and provincial governments. A decentralized coastal zone was allocated to provincial administrations, extending up to 12 nm from the shoreline, a third of this, the areas nearest the land, was assigned to local government. Within their jurisdiction, local and provincial government are responsible for 1) exploration, exploitation, conservation, and management of coastal resources, 2) administrative affairs, 3) zoning and spatial planning affairs, 4) enforcement of regulations issued by the regions or delegated by central government, 5) participation in maintenance of security, and 6) participation in defence of state sovereignty (Siry, 2006). The province, however, holds authority over cross-jurisdictional districts and cities. Territorial waters beyond the 12 nm zone remain under the jurisdiction of central government. The type of industry and the nature of development activities also determine which level of government is responsible: local government for example is responsible for selected activities such as aquaculture (Tiwi, 2004; Kay and Alder, 2005). Traditional fishing rights are not affected by these changes.

In order to harmonize and integrate different sectoral policies, the Ministry of Marine Affairs and Fisheries (MMAF) was established in 1999 (Tiwi, 2004). The Fisheries Act of 2004 enables the MMAF to implement measures against illegal and destructive fishing methods.

The Coastal Zone and Small Islands Management Act was passed in 2007 to decentralize coastal management. It offers a framework for coordination and integration in coastal management and planning. General provisions regulate administration and implementation, monitoring and evaluation as well as conflict resolution and funding. The law also promotes voluntary, incentive-based programs for local ICM initiatives (Siry, 2006).

Table 1 highlights key coastal management developments in both countries that occurred in the wake of the end of their respective autocratic regimes.

2.4. Implementation achievements

In Indonesia, decentralization has transferred powers from authorities in the national capital, Jakarta, to regional governments (Aspinall and Fealy, 2003). Subsequently, a competition between central and regional/local government to maximize political

standing and economic gains has clearly arisen. Aspinall and Fealy (2003) found that in this power struggle between local and regional elites, *bupatis* (regents) and the chairpersons of local legislative bodies frequently invoked the term 'rakyat' ('the people') as a source of legitimacy. While inter-elite competition is not uncommon in democracies, local and regional governments in Indonesia used the new opportunities arising with decentralization to increase their control of resources within their new jurisdictions. Democratization, decentralization and participation in Indonesia have thus strengthened regional and local authorities which have been clear beneficiaries of the new governance system.

While the struggle between state and federal authorities is also a feature of decentralization in Brazil, decentralization and ICM policies have also encouraged the involvement of civil society in coastal management (Glaser and Krause, 2005). The Brazilian PNGC triggered a number of participatory initiatives, such as the coastline intervention plans which are examples of successful participatory management at the local scale (Jablonski and Filet, 2008). In 2001, the government of Brazil launched the ORLA initiative promoting decentralized, integrated, and participatory shoreline management and prioritising partnership building and conflict resolution between competing uses (Tagliani et al., 2007). To date, the ORLA project runs in 58 municipalities in 14 of Brazil's coastal states (Belchior, 2008). While public awareness of environmental issues is still relatively low, recent years have seen an increase in public interest, as reflected in a growing number of environmental groups (NGOs), public institutions dealing with environmental conservation, and research centres (Diegues, 1999; Asmus et al., 2006). A number of cooperative networks that include non-governmental organizations and the scientific community have recently been created, such as the Coastal Agency, and the Observatório de Litoral de Santa Catarina (Belchior, 2008) and civil society organizations are showing increasing interest in participating in coastal management initiatives such as the coastline intervention plans (Jablonski and Filet, 2008).

Since the New Brazilian National Constitution came into force in 1988, a growing number of community-based coastal resource management schemes have been created (D'Incao and Reis, 2002; Glaser and Da Silva Oliveira, 2004; Peterson et al., 2008) and, particularly during the past decade, the Brazilian government has pushed for the establishment of protected areas (World Bank, 2006). In some states, such as Bahia, vast areas have been designated as protected areas (Jablonski and Filet, 2008). The extractive reserves (RESEX – *reservas extrativistas*) have operated in rainforest communities since the 1990s, and were introduced to coastal Brazil as a second generation of coastal RESEX (Simonian and Glaser, 2002) as a form of co-management between coastal communities and federal government (Glaser and Krause, 2005). The RESEX concept promotes the inclusion of traditional ecosystem users into national development and is based on the right of local communities to develop local management rules for local resource use. Based on these principles, the Marine Extractive Reserve (RESEX-Mar) is a community-based multi-use coastal and marine resource management approach that incorporates environmental and cultural protection as well as economic development objectives (World Bank, 2006; Diegues, 2008). The establishment of RESEX in Brazil has been successful in stimulating local movements and giving rights to local resource users, albeit imperfectly, which has enabled user groups to realize effective livelihood strategies that are compatible with ecosystem protection (Glaser and Da Silva Oliveira, 2004).

In Indonesia, the Autonomy Acts of 1999 and 2004 explicitly encourage community-based and collaborative management schemes and a growing number of ICM projects have been initiated over the past decade. The development of coastal zone

management was triggered through international and bilateral programs and projects that promoted decentralized, participatory, and integrated coastal zone management (Siry, 2006, 2009). Other Indonesian laws that acknowledge customary 'adat' law and encourage the participation of local communities include Decree 41/2000 on Guidelines for Sustainable Community-based Small Island Management and Decree 58/2001 on the establishment of a surveillance system with active involvement of the community. Thus, Indonesia possesses the legal framework to revitalise and institutionalise customary law in local governance (Siry, 2006) with incentives for participatory approaches such as community-based and co-management schemes (Patlis et al., 2001; Glaser et al., 2010b). Traditional coastal management systems such as *sasi* (open-closed system in Maluku), *panglima laut* (traditional resource manager in aceh), *malimau pasie*, *malimau kapa*, *alek pasie* (traditional fishing ritual in West Sumatra) are still being practised in many coastal communities today. In Lombok, the local community revitalised a traditional governance system called 'awig-awig' based on a set of local rules that regulate the fisheries. In these regions, local people are involved in monitoring, controlling, and surveillance activities. This has increased their sense of stewardship over coastal and marine resources and, in some instances, it has helped to discontinue destructive fishing (Satria and Matsuda, 2004). During the decentralization era, numerous locally managed Marine Protected Areas (MPAs) were established in Indonesia (Elliott et al., 2001; Crawford et al., 2004), many of them in regions without coastal and marine customs and traditions. An evaluation of Indonesian Marine Protected Areas in 2002 classifies only 3 out of 131 MPAs as effectively managed (Burke et al., 2002). This indicates that local participation potentials need to be more effectively tapped in regions with heterogeneous 'neo-traditional' populations and a high proportion of recent migrants among the population (Glaser et al., 2010a,b).

The national Integrated Coastal Management (ICM) policy frameworks of Brazil and Indonesia are clearly at different stages in their development. Although a number of non-governmental and bilateral ICM projects have arisen across Indonesia over the past decade, a legal framework for ICM was only adopted in 2007. To what extent this so-called Law 27 harmonizes coastal management and improves vertical and horizontal integration between the involved authorities and actors remains to be seen. In contrast, in Brazil, the PNGC has been the overarching framework for decentralized, integrated, and participatory coastal management for over 20 years. Responsibilities and structure are well-defined. However, although the PNGC is institutionalized in all coastal states, its implementation remains incipient and fragmented. In 2008, of 17 coastal states, only eight had established specific coastal management agencies, nine had developed coastal management state plans, and five had formed coastal management committees (Jablonski and Filet, 2008). The different rates of progress in implementing ICM reflect socioeconomic differences between the wealthier Southern and the Northern states which are poorer both in financial and human resources (Asmus et al., 2006). To date, the Brazilian PNGC has mainly been used for mapping, geo-referencing, and meta-data management (World Bank, 2006). At the federal-level, a major achievement is the development of an information system (SIGERCO). Progress was also made in ecological-economic zoning and state of environment reporting in the coastal zone.

2.5. Implementation challenges

In both Indonesia and Brazil, the reform-era brought substantial legal changes. Despite some progress in terms of stated reform-era

objectives, Brazil and Indonesia still face some obstacles in the implementation of decentralized ICM. Box 1 summarizes the key challenges that both countries share.

2.5.1. Fragmented legal system

In Indonesia, at least 22 laws affect the coastal zone, creating a complex system. One analysis of coastal management legislation (Dirhamsyah, 2006) reveals legal conflicts, inconsistencies, gaps, and overlaps which provide ample scope for ambiguous interpretation and hidden agendas. The legal framework consists of many broad and vague provisions, with few guidelines and clear mandates. For example, the implementation of the autonomy law in 1999 created ambiguity over 'traditional' fishing rights. While traditional fishing is exempted from the exclusion zones that demarcate local boundaries in the coastal zone, the term 'traditional fishing' itself is not well-defined. It is currently interpreted in relation to fishing methods rather than to historical or heritage considerations (Fox et al., 2005). This means that local fisheries are currently open to exploitation by anyone who uses simple methods – or who is conversant with the administrative hurdles to obtain permits. Local 'traditional' fishers, on the other hand, have little capacity and few rights to sustain their resources, to legally adopt more effective technologies or to protect their local coastal ecosystems from exploitation by outsiders. Conflicts among resource users have resulted and illegal fishing practices (bomb, cyanide) are becoming more common while local social energies, which might be mobilized for sustainability-oriented ecosystem-co-management of local marine territories, are lost. Legal inconsistencies and conflicts are also apparent at regional and local scales. Since the enactment of the autonomy law, at least 7000 government regulations (PERDAs) were passed by regional governments, without consultation with central government and often in conflict with central State policies and legislation (Dirhamsyah, 2006). Many of these regulations focus on increasing regional incomes with little regard for conservation and sustainability.

In Brazil, national environmental legislation focuses on environmental protection but gives little consideration to the contribution of coastal ecosystems to the well-being of poor coastal populations. For example, any human use of mangroves is prohibited although many coastal communities are highly dependent on mangroves for a range of economic and cultural uses (Glaser and Krause, 2005; Glaser, 2003). This is a source of conflict between conservation authorities and ecosystem-dependent communities and at the root of the high degree of non-compliance with ICM laws on mangrove coasts in North Brazil. Co-management schemes such as the extractive reserves (RESEX) are currently being introduced along the Brazilian coast in order to establish more effective, locally accepted governance systems. However, although local user communities have obtained the right to establish local resource management rules, the legal standing of locally agreed rules can still remain unclear. This has produced conflict and confusion over locally developed rules that do not comply with federal legislation and may undermine the willingness of local users to invest time and effort in co-management (Glaser and Da Silva Oliveira, 2004). In addition, decisions at the municipal and state level more commonly reflect the interests of strong economic sectors in those regions such as real estate and tourism. In the state of Bahia, for example, new municipal laws have transformed environmentally protected areas into urban areas (Jablonski and Filet, 2008). In contrast to the bottom-up institutional designs such as the RESEX, there are also numerous protected areas in Brazil that were created through top-down planning and which resulted in the displacement of residents or in severe livelihood restrictions for local ecosystem user communities. Such protected areas have further impoverished already marginalized rural coastal populations (Diegues, 1999, 2008).

Box 1. Challenges in implementing decentralized coastal management in Brazil and Indonesia.

Implementation challenges

Fragmented legal system: Integration between different sectoral agencies (horizontal integration) and levels of government (vertical integration) remains low, especially in Indonesia. Unclear and overlapping mandates cause conflicts over spheres of influence and jurisdiction. Mismatches between national priorities as reflected in legal system (e.g. environmental protection) and local realities and priorities can be found in both countries. Conflicts and inconsistencies between different sectoral laws, and between national law and regional regulations prevail.

Administrative obstacles & local mismanagement: Local governments are short of funding, training, staffing, and scientific and other information. Local and regional officers are given new responsibilities without training in integrated, decentralized coastal resource management. Some major decision-making powers still rest with central government. Regional and local decision-makers often lack commitment to conservation and sustainability. Economic interests are generally prioritized over environmental protection. Local and regional regulations do not always comply with national law, and many prioritize economic gains for the region. Lack of accountability and corruption, often to the advantage of regional elites, cause mismanagement.

Public participation: Active involvement and empowerment of communities in coastal management remains incipient and fragmented. Decentralization policies have empowered local and regional authorities while the participation of local ecosystem users, although connected with the decentralization rhetoric in both countries, has lagged behind, especially in Indonesia. Capacity-building is needed to raise awareness and increase the ability of local users to engage in coastal resource management.

Communication & cooperation: A lack of information exchange, communication and cooperation between governmental agencies and civil society can be noted. Only little involvement of scientists in management is found.

2.5.2. Administrative obstacles and local mismanagement

Many local governments have extremely limited financial resources and are dependent on allocations from the central government in Brazil and Indonesia (Siry, 2006; Belchior, 2008). Limited administrative, technical and management capacities of regional and local governments are a major obstacle to the successful implementation of decentralized coastal management in both countries. While local and regional government officials have gained a broad range of new responsibilities with decentralization, they have rarely received appropriate training to implement transparent, responsible, integrated resource management (Dirhamsyah, 2006; Polette et al., 2006; Reis et al., 2002; Tridoyo, 2008).

In Brazil, this is especially the case in the North-Eastern states, where limitations in qualified human resources and information and data access are obstructing the implementation of the PNGC (Barragán Muñoz, 2001). Gerhardinger et al. (2011) argue that the lack of leadership and low institutional and financial capacities are the main flaws of the newly decentralized systems of marine conservation and resource management in Brazil.

In Indonesia, political decentralization has 'created a diversity of systems of management and mismanagement' (Fox et al., 2005). Lowe (2000) shows how limited financial support from the central government, in combination with ambiguous legal frameworks can allow local and regional bureaucrats to engage in profit-making activities. In her study on Sulawesi Island, Indonesia, Lowe demonstrates how Indonesian resources law favours large business interests over local community needs. The study reveals how a network of fish camp owners, exporters, and government officials derives great financial benefits from marine resource exploitation. In contrast, the local fishers only receive a minimal return while, in addition often also being exposed to prosecution and extortion and to the reduction in ecosystem services associated with unsustainable and often illegal fishing practices. This example demonstrates state complicity in condoning biased, illegal and unsustainable coastal resource use, polarising the economic and social inequalities and the ethnic and class hierarchies prevalent in the extractive economies of Indonesia. Lack of accountability and transparency, as well as the prevalence of corruption are some of the roots of such local mismanagement (Dirhamsyah, 2006; Patlis, 2005).

2.5.3. Public participation

Public participation, in terms of active community involvement in coastal management, still remains low in both countries (Polette et al., 2006; Julian, 2003; Dahuri and Dutton, 2000) and

decentralization has mostly empowered local and regional authorities rather than local ecosystem users. While the Brazilian Federal Environmental Management Agency (IBAMA) promotes the active participation of local communities in coastal management, the concerned agencies of Brazil's coastal states and municipal regions have continued to restrict the role of local ecosystem users to passive or consultative participation (Glaser and Krause, 2005). In Patos Lagoon in Rio Grande, for example, fisheries co-management agreements between communities, NGOs and local governments failed to adequately promote the local fishers' interests in decision-making processes so that local fisher participation was low despite the recognised legitimacy of the forum (Kalikoski and Satterfield, 2004). Similarly in the Spermonde Archipelago, Indonesia, the generally weak performance of community-based management of marine protected areas can be attributed to the lack of an effective framework to include local communities in institutional design and implementation (Glaser et al., 2010a; Ferse et al., 2010).

2.5.4. Communication and cooperation

Many issues concerning ICM and public participation result from poor communications. This leads to a limited awareness among community members of their roles and responsibilities in co-management and fosters an environment of low social organisation and mobilisation. Only very few partnerships as envisaged by ICM have been established between implementing agencies and civil society groups in both Brazil and Indonesia (Belchior, 2008; Asmus et al., 2006; Cinner et al., 2012). Nonetheless, the legal reforms have increased the number of community-based and co-management systems and positive examples of community-based management exist in both countries (Satria and Matsuda, 2004; Diegues, 2008; Crawford et al., 2004). However, some major issues remain (Diegues, 1999; Julian, 2003; Crawford and Kasmidi, 2006; Satria et al., 2006). Most community-based or co-management schemes encounter problems of finance and enforcement, so that local consultation and participation remain low (Julian, 2003). Traditional governance systems (for example 'adat' law in Indonesia) in many regions have been replaced by open access regimes that induce or reinforce conflict over marine resources (Dirhamsyah, 2006). In some regions of Brazil, jurisdictional conflicts have created tension and mistrust between government agencies (Glaser and Krause, 2005). Generally, communication and cooperation between government agencies, civil society, and the research community is considered insufficient (Polette et al., 2006) and in both Brazil and Indonesia, integration and coordination

between sectoral agencies and between different layers of government is seen as in need of improvement (Diegues, 1999; Asmus et al., 2006; Patlis, 2005).

3. Discussion

The implementation of decentralization in integrated coastal management still faces a number of serious challenges with important parallels in the large coastal nations Indonesia and Brazil. The discussion below focuses on how stakeholder perceptions and interests, and power dynamics in the decentralization era affect local ecosystem user participation in coastal management.

3.1. Stakeholder perceptions and interests

In both Brazil and Indonesia, legal ambiguities, gaps and overlaps provide scope for interpretation and hidden agendas. Taking advantage of these, decision-makers at local, regional, and national government levels pursue their different political agendas. The various interpretations of laws and policies encountered are based on a diversity of values and priorities among concerned stakeholders. While central government may pass legislation and policies that promote community participation, integration, sustainability, and environmental protection, many local authorities prioritise their own financial and power gains. In Indonesia, the term 'management authority' as used in the Autonomy Law has been (mis-) interpreted by some local government authorities as 'sovereignty'. Decentralization has thus increased regional and local financial and decision-making powers while the capacitation and involvement of local communities or ecosystem users has faded into the background (Satria and Matsuda, 2004). Indonesian bureaucracies are also driven by definitions of 'development' that emphasize economic productivity while taking little account of traditional uses of coastal areas or equity issues. Common property management systems of many indigenous groups have thus been marginalised by stronger interests and political agendas (Armitage, 2002). In Brazil, government authorities at the municipal and state level also often favour economic growth over environmental protection.

Political decentralization and democratization have also been associated with divergent perceptions and interpretations of 'what type of participation' and 'whose participation' is to be fostered. The Brazilian federal-level National Environmental Management Agency (IBAMA) promotes the active participation of local communities in coastal management through its extractive reserves (RESEX) approach. The concerned agencies of Brazil's coastal states and municipal regions promote little, if any empowerment for local coastal populations. After decades of autocratic centralist government, regional governments understand participation as capacity-building for the administrations of the individual states of federal Brazil and, in some cases, also for the municipal administrations within those states (Glaser and Krause, 2005) but rarely as enfranchisement of coastal ecosystem users. In Indonesia, the traditions of a strongly hierarchical society are reflected in current day participatory practice limiting the options for marginal stakeholders to express and realize their interests (Glaser et al., 2010a,b).

Lack of acknowledgement and understanding of different values, priorities, and perceptions and the continued exclusion of those whose livelihoods depend most on coastal ecosystems thus lie at the root of many coastal management problems. Legislation, which ignores the needs of local populations results in local non-compliance. This leads to social dysfunctions including the criminalization of subsistence users of coastal ecosystems such as firewood collectors in mangrove forests (Glaser and Krause, 2005; Glaser et al., 2003). Tensions and distrust, conflicts between

different authorities and levels of government, and reinforced competition between different resource uses often follow (Tagliani et al., 2007; Fox et al., 2005).

For both countries, the lack of a common vision between central and regional authorities as well as the predominance of sectoral policies and legislation over integrated coastal management practice create institutional fragmentation and enforce inequitable implementation outcomes.

3.2. Power relationships

That power relationships influence the implementation of coastal management policies and legislation is an obvious truism. Formal and informal laws, rules and regulations arise in their particular historical, socioeconomic and cultural contexts. Pre-existing hierarchies of power and wealth influence how and which rules and laws are developed and whose interests and needs are served by this. That decentralization has, in many instances, increased the opportunities for rent-seeking and corruption and the potential for elite capture should not unduly surprise us then. It has been observed for Brazil and other Latin American countries that benefits of decentralization have failed to materialise for the majority of people, and that, in the course of decentralization, the rise of regional elites has often gone hand in hand with increased conflict and the exclusion of minorities (Jose, 2002; Kauneckis and Andersson, 2009). The reinforcement of regional elites through decentralization has also been observed in Indonesia (Hofman et al., 2009).

Classical hierarchical and unequal multi-stranded relations of mutual dependence (patron–client relationships; see (Wood, 2003)) are still widely encountered in Brazil (Maneschy, 1995) and Indonesia (Pelras, 2000) today. As classical clients, local ecosystem users are often not only financially dependent on their patrons, but also rely on their patron's protection against a range of risks including sickness, prosecution and police extortion. Natural resource exploitation in Indonesia is organized through entrepreneurial networks in which urban entrepreneurs and government officials benefit most. State complicity at various levels of government enforces economic and social inequalities and the ethnic and class-based hierarchies prevalent in extractive economies in Indonesia (Lowe, 2000). Somewhat in parallel, an analysis in Brazil (Seixas, 2006) finds that decades of socioeconomic marginalization and prevalence of patron-client dependencies have reduced local ecosystem users' abilities to autonomously assume responsibilities in resource management. Thus, not only institution-building and/or reformation in the context of prevailing power structures but also capacity-building in community organization is needed to enable local resource users to actively engage in participatory forms of coastal management.

3.3. Local ecosystem user participation

Where there are no clear regulations on who has which rights and responsibilities, decentralization is likely to strengthen prevailing elites and power structures. The decentralization of central powers to regional and local government authorities is therefore necessary but not sufficient for democratic and sustainability-oriented policy reform. Without local and regional responsibilities which democratically involve local coastal populations and which provide downward accountability (Ribot, 2001), decentralization results in the further disempowerment of already marginalized local ecosystem users.

It is thus not sufficient to identify objectives, such as sustainability and environmental protection, through central planning and incorporate these into national law. Enforcement at the local level

typically fails since local realities and priorities determine which laws and rules are acceptable and enforceable in communities. In both Indonesia and Brazil, coastal ecosystem users have formulated the wish to regulate the use of natural resources and to be able to exclude outsiders from local resource access (Glaser and Krause, 2005; D’Incao and Reis, 2002; Peterson et al., 2008; Elliott et al., 2001). While national laws do not permit such exclusion, many communities are themselves developing and attempting to enforce rules to exclude ‘outsiders’ in order to sustain their surrounding ecosystems for local livelihoods and according to local sustainability agendas. Local priorities such as the fulfilment of ecosystem users’ subsistence and equity standards (Krause and Glaser, 2003a,b) are central to this. An example of a national system of marine tenure in Chile which allocates exclusive user rights and responsibilities to fisher collectives shows how the empowerment of local users embedded in a pre-existing social network of fishers can trigger a governance shift towards a more sustainable use of marine resources (Gelcich et al., 2010). According to Gelcich et al. (2010), governance shifts “are systemic shifts that include changes in management paradigms, regulatory frameworks, underlying norms and values, knowledge production systems, equity and power distribution”. Within national decentralization, such bottom-up evolutions of coastal management institutions need to be recognized and integrated into the evolving national and regional legal frameworks in both Indonesia and Brazil.

On the whole, despite the strong rhetoric to the contrary, national policies and legislation have not been very effective in encouraging participatory coastal management in association with decentralization in Brazil or Indonesia. However, regional, and often culturally specific coastal management approaches have shown successes. Regional, community-based approaches such as the RESEX in Brazil and culturally specific customary law-based coastal management practices in Indonesia have the potential to form the basis for new participatory coastal management arrangements. Institutions, which are developed with the active involvement of concerned ecosystem users can increase the legitimacy of public authority and the local predisposition to follow rules (Gelcich et al., 2010; Green and Penning-Rowse, 1999). In order to accommodate the different, potentially conflicting stakeholder interests, it is important to prioritize stakeholder participation in decision-making processes. The negotiation of objectives and priorities, and, if possible, consensus is essential for realising the clear potentials of decentralization to develop more democratic and socially and ecologically more sustainable coastal management. This needs to be combined with a high degree of transparency about objectives and processes.

3.4. On decentralization, participation and ICM

This paper has analysed three parallel political developments: the decentralization of authority, the implementation of the integrated coastal management concept, and the active participation of coastal ecosystem users in governance and management. These factors share some common ground. In Indonesia and Brazil, decentralization and ICM policies name public participation as one of their principles. However, as we have shown, the active participation of the public requires forms of decentralized planning and management that allow community members to take part in decision-making processes. Integrated management, on the other hand, requires some form of centralized coordination to bring together divergent functional, sectoral and geographic administrations (Green and Penning-Rowse, 1999). In Indonesia, the integration between central, regional, and local government is mainly challenged by the autonomy law, which in practice has encouraged uncoordinated local decision-making and

mismanagement. In Brazil, central authorities continue to exist along with newly created institutions even if responsibilities, institutional functions and laws are contradictory or overlap.

Institutions are dynamic and cannot be constructed or dismantled overnight. As Green and Penning-Rowse (1999) put it: “the practical challenge is how to have an unholistic and fragmented institutional structure which can deliver integrated management”. Thus, decentralized mechanisms for resource management will be insufficient since, within an integrated coastal management framework, central government is needed to develop the institutional capacity of local governments, including their coordinating, monitoring and evaluating decentralized activities (Jose, 2002). Interestingly, the debate on the evolution of natural resource co-management comes to the same conclusion: Effective participatory management requires a framing role of the central state that needs to be carefully and reliably defined and implemented (Ferse et al., 2010; Sen and Nielsen, 1996). The institutional reform or the creation of new institutions within a decentralization context and the reallocation of rights and responsibilities are thus only one facet of governance transformation towards participatory ICM.

4. Conclusions & outlook

Both countries share a number of challenges in the implementation of their legal and institutional frameworks. Despite the dominant political rhetoric of empowerment and participation of local communities in Indonesia and Brazil, a much more prominent outcome of recent coastal management policy has been the decentralization of power to local authorities. The participatory inclusion and empowerment of local ecosystem users have been impeded by a number of problems including financial restrictions, lack of capacity on a local level to handle responsibilities and conflicting priorities between stakeholders. Pre-existing hierarchical systems are thus easily reinforced, which can leave local resource users marginalised from the decision-making processes that affect them.

On the other hand, decentralization has also created the scope for local participation to achieve management success in both countries. Despite their very different political and cultural contexts, promising examples of community-based and customary coastal management exist in both Indonesia and Brazil where empowered local communities have actively taken part in shaping, and implementing successful management systems which reflect local realities and priorities. Local leaders have played key roles for the success of decentralized coastal management schemes. Their values and capacities were central for the development of institutional arrangements that balance the coordination and networking requirements with the empowerment of local institutions. While this paper has reviewed some of the ‘success stories’ and implementation challenges from both countries as studied by colleagues from around the world, more research is needed to analyse in more depth success factors and identify common ground.

Visser (1999) criticises that coastal management policy tools commonly focus more on formal structures such as government while neglecting informal institutions such as perceptions, values, cultural patterns of behaviour and social rules of action. Along similar lines, we argue in our analysis of Brazilian and Indonesian developments in an era of major political reform that an improved understanding of stakeholder perceptions and interests as well as of the institutional conditions and dynamics that render them incompatible is needed to improve the prospects of democratic decentralization in coastal management. User communities are motivated to protect local ecosystems against those who do not share their local sustainability agendas. For coastal management to become socially more just and environmentally more benign, local

communities need to be better informed, capacitated and officially supported so that their clear quest to protect the ecosystems on which their livelihoods depend can become part of wider national and international policy agendas. This requires collaborations between authorities and local users which rely on effective information exchange, the active participation of both government and non-government stakeholders within clear democratic structures and up- and downward accountable leaders. Decision-makers involved in designing decentralization of coastal management cannot afford to overlook this. As the consequences of unfettered globalisation are becoming increasingly obvious in many regions today, these conclusions gain increased saliency.

Acknowledgements

We thank both Luky Adrianto of the IPB Bogor (Indonesia) and Antonio Carlos Diegues of the NUPAUB, Sao Paulo (Brazil) for their reading and commentary on this article. Thanks are also due to three anonymous reviewers who provided succinct suggestions and usefully critical questions.

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