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Exit the Dragon? Collapse of Co-management at Komodo National Park, Indonesia

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Abstract: A significant current approach to creating compatibility between tourism and biodiversity conservation focuses on managing protected areas under collaborative management arrangements. The collaborating stakeholders are generally government agencies, non-governmental organizations, community groups and occasionally private sector organizations, with the balance determined by local circumstances. The aim is to create resilient governance systems informed by adaptive co-management philosophy. In 2005, a collaborative management initiative was set up at Komodo National Park, in eastern Indonesia, to manage a group of islands inhabited by the iconic Komodo lizard and several human communities. The area is popular with general interest tourists wishing to see the 'dragons' and with divers enjoying the rich coral reefs fringing the islands. The reefs are also the spawning grounds for fish-stocks exploited by fishermen based locally and further afield. The collaborative arrangements were designed to regulate both tourism use of the islands and fishing, but despite substantial investment of expertise and resources, it ran for just 5 years before collapsing. The reasons for its failure lie generally in the difficulty of managing complex social-ecological systems, and specifically in the overly narrow design of the initiative and in the political ecology of the Indonesian civil service, which despite anti-corruption efforts retains high levels of venality and weak environmental awareness.

Keywords: Indonesia; Komodo National Park; tourism in protected areas; collaborative management initiatives; world heritage site management.

Introduction

The World Heritage Site and National Park of Komodo, in eastern Indonesia, was managed as a Komodo collaborative management initiative (KCMI) from 2005 to 2010. The KCMI was established as part of a wave of renewal of governance systems after the fall of the Suharto dictatorship in 1998, during a period of optimism concerning improved management of Indonesia's resources. It collapsed after a difficult life and slow death which cost millions of dollars. At its core, the arrangement seemed straightforward: the protection of the endangered Komodo 'dragon', the world's largest lizard, and the rich coral reefs and fisheries around the islands they inhabit. However, the story is as turbulent as the waters of the Sape Straits in which the Komodo National Park is located.

This article will attempt to unpack the layers of neo-liberal discourse which underpinned the KCMI and identify the reasons for its failure. This paper will argue that in its evolution and eventual collapse, the system illustrates the challenges of managing complex social-ecological systems and an annihilatory human trait in managing common pool resources, i.e., the tendency to exploit them for individual benefit rather than steward them in the public interest. The tourism industry is central to the story because of the wealth and global attention it channels to the islands.

The paper begins with an overview of the discourses which led to the establishment of the KCMI, explains how the arrangement was intended to function, and then charts its disintegration. I draw conclusions which may inform the on-going debate on how natural resources are managed. During field visits in 2010 and 2012 a range of stakeholders was interviewed, including community members and staff from public, private and third sector organizations associated with park management and local development, and a questionnaire survey

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of tourists was carried out. The investigation built on prior experiential knowledge of Komodo that the author gained as a tour leader and travel writer during visits from 1982-1993.

The Neo-liberalization of Natural Resource Management

When an international framework for protected areas classification was first proposed in 1933 (Dudley 2008), a biocentric approach to protecting flora and fauna prevailed. Successive international conferences gradually acknowledged existing anthropogenic influences on parks and inevitable future pressures generated by population growth. A shift towards more flexible, pragmatic solutions to resource conflicts was enshrined at the 1982 Third World Congress on National Parks, held in Bali, where it was recognized that protected areas are a cultural concept, and that local resentment towards them had to be overcome by incorporating human welfare needs in addition to conservation (McNeely and Miller 1984). By the early 1990s, protected areas were viewed so differently that new terms such as Integrated Protected Areas Systems and Integrated Conservation and Development Projects (ICDPs) were coined to express the idea that protected areas could not be isolated from their hinterland of human activity (Wells and Brandon 1992).

ICDPs were intended to win the support of local communities for conservation by providing them with alternative sources of income to consumptive resource exploitation: social equity and economic development were specifically linked to conservation. There was emphasis on involving local people in the design and implementation of these programmes as well as on creating income-generating opportunities. Tourism was often included as one of the new forms of economic activity. However, the localized and limited incentives offered were rarely sufficient to reduce resource exploitation in the face of the complex and multi-scalar challenges affecting protected areas. Participatory methodology was therefore broadened to include government institutional structures and the wider economy, since it was recognized that village-level change could only take place within a broader enabling framework of policy, advocacy and capacity-building (Worah 2002).

The ideal of community-based management which underpinned ICDP philosophy was part of a broader global shift from *government* to *governance* (for example Plummer and Fennell 2009; Zachrisson 2009); in other words towards reducing public sector intervention in management of common property resources. In many countries, partnerships including public sector, commercial enterprises and community groups were established – particularly from the mid-1990s – to provide governance frameworks for the resources. These partnerships, generally known as co-management or collaborative management initiatives, have been particularly applied in forestry, fisheries and protected areas, but were often still rooted in a linear, mechanistic understanding of planning and management based on rationalist interpretations of the natural world, whereas protected areas systems are too 'messy' to be interpreted in this way. The methodology then evolved into 'adaptive' co-management (ACM) schemes, in an effort to encompass the uncertainty of social-ecological systems and embed greater flexibility into management processes (Bown et al. 2013). The core characteristics of ACM are generally accepted to be adaptive capacity, social learning, communication, power-sharing, and shared decision-making (Plummer and Armitage 2007a).

From the early stages of ACM schemes there has been doubt about their efficacy, however, partly because the risk-averse strategy of key institutions militates against the necessary paradigm shift from a classical, linear approach to resource management to a more holistic appreciation of complex systems. Plummer and Armitage (2007b) devised an evaluation framework for ACM based on the three elements of robust ecological conditions, improved social and economic livelihoods outcomes, and process, including communication, pluralistic linkages and dialogic decision-making. While most evaluation of these schemes has not overtly been done using the rather complicated methodology they propose, several flaws with ACM schemes have been found which tie in with these themes, especially the process aspects.

Some suffer – like ICDPs – from too narrow a focus, in that national or international influences are not always taken sufficiently into account (e.g., Horigue et al. 2012), while the competing demands of actors at local, national and global levels cannot always be reconciled (Nielsen et al. 2004). To address this, Wilson et al. (2006) identified the continuing central and mediating role of government as essential as well as the imperative of cross-institutional working. Here, the traditional vertical structure of government ministries means that new formal structures of coordination are sometimes required (Makino et al. 2009). Further weaknesses are the reluctance of traditional conservation agencies to relinquish management control over resources (Nursey-Bray and Rist 2009) and poor take-up of indigenous knowledge (Urquhart 2012). Additional constraints to successful ACM were poor group dynamics, including low levels of transparency (Nielsen et al. 2004), lack of trust (Plummer and Armitage 2007a) and inequitable power relations (Akbulut and Soylu 2012). An overarching need is for a genuine set of 'commonalities between [stakeholder] management aspirations' (Nursey-Bray and Rist 2009: 126); in other words, if stakeholders do not share a vision of intended outcomes and the processes needed to achieve these, success is unlikely.

On the other hand, researchers have also determined that ACM can – and does – create the conditions for co-existence of biodiversity conservation and socio-economic development through allowing adaptation of procedures, shared and transformational learning, cross-scale information exchange, and representation of the needs of multiple actors (see Moreno-Sánchez and Maldonado 2010; Van Tuyen et al. 2010; Leys and Vanclay 2011; Diduck et al. 2012). Encouragingly, a meta-analysis by Schultz et al. (2010) of ACM in biosphere reserves in 55 countries found that conservation and sustainable development were generally progressed through the schemes. Testing its applicability to tourism in protected areas, Plummer and Fennell (2009) found that although adding tourism to the already complicated and multi-scalar systems of protected areas governance created further complexity, embracing an ACM methodology is more likely to produce positive outcomes than traditional rational-comprehensive and mechanistic models, which still 'figure substantially in the planning and management of protected areas' (162). In the specific context of Indonesia, Siry (2011) concludes that co-management is more appropriate for coastal zone management than the more straightforward community-based management because of the continual social learning process it emphasizes, its inclusiveness regarding decision-making, and the opportunities it offers for a balance of power between a wider range of stakeholders.

The ACM ideal is closely linked to resilience theory, where resilience is defined as 'the capacity of a system to absorb disturbance and reorganize while undergoing change so as to still retain essentially the same function, structure, identity, and feedbacks' (Walker et al. 2004). Many of the same terms are used as in resilience: for instance in his exploration of resilience as an analytical perspective to social-ecological systems, Folke (2006: 258) refers to 'complex adaptive systems which interact across temporal and spatial scales'. As with ACM, their understanding relies on non-linear approaches to system evaluation, on nested hierarchal systems or multi-scale interactions as well as on adaptability, flexibility and continual learning.

These concepts have been taken forward by development practitioners in the methodology of 'Flexible and Forward-looking Decision-Making' (Jones et al. 2013) and were used by Cochrane (2010) to formulate a 'Sphere of Tourism Resilience' since tourism is a prime example of a complex adaptive system, being multi-sectoral, multi-scalar and multi-disciplinary. The 'Sphere' posited that the essential pillars of a sustainable tourism system are good leadership, stakeholder cohesion and harnessing market forces within a context of adaptability, flexibility and learning (Figure 1).

Although drawing on resilience concepts and applying them to tourism contexts, a key difference between the 'Sphere' and previous analyses of ACMs was its insistence on the centrality of harnessing market forces, missing from most discussion of ACM systems despite their frequent

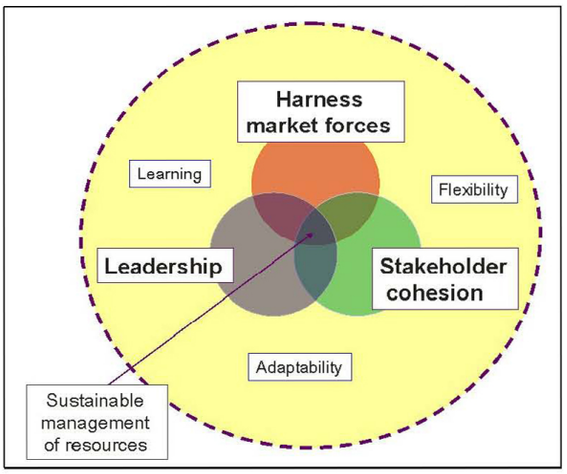

Figure 1. The Sphere of Tourism Resilience

Source: Cochrane (2010)

reliance on extracting sustainable economic benefit from natural resources.

Based on the above, the factors leading to a successful ACM system can be summarized as follows:

- A broad focus incorporating different system levels.
- Transparency, mutual trust and shared vision between stakeholders, including attempts to achieve more equitable power relations, for instance through acknowledging indigenous knowledge systems and engaging in genuine dialogic processes.
- Systems designed to result in robust ecological systems and improved livelihoods outcomes, including market-focused mechanisms of sustainable resource exploitation.
- Willingness by public sector agencies to relinquish resource management control and accept cross-institutional working, sometimes requiring new coordination structures, but retention by government of a strong central role to mediate between groups competing for resources.

After narrating the Komodo case study, we shall examine the KCMI against these factors and determine whether its demise was due to missing elements.

First, the research methods will be explained in more detail. A primarily qualitative style of enquiry was undertaken in order to uncover and explore themes expressed by actors in the KCMI scenario. Semi-structured interviews with informants were used to back up observation and desk research. It was felt that respondents would be more likely to express their views if the interviews were kept informal and fluid, although a definite agenda was followed by the researcher. The observation and interviews were carried out over 16 days in the national park during 2010 and 2012, with 3 days talking to relevant informants elsewhere. 38 interviews were held in total with informants representing key stakeholder groups: people working in the public sector (national park authority, government tourist office – n=7), private sector (dive operators, accommodation & food providers, tour guides – n=11), NGOs (SwissContact, The Nature Conservancy and others – n=8), community members (n=6), and members of the collaborative management authority, Putri Naga Komodo (n=6). Standard ethical practice was followed in that the participants were informed of the purpose of the research and that their anonymity would be guaranteed. The interviews were mainly carried out in people's offices or sitting outside houses in the case of the community informants, and were conducted in English or Indonesian (in which the researcher is fluent). In addition, 45 foreign tourists filled in a survey questionnaire, either on Komodo Island or in Labuan Bajo after their return from the park. The survey followed a purposive sampling strategy as circumstances did not permit a true random strategy, but nevertheless was felt to generate some useful comments.

The Challenges of Collaborative Management in Indonesia

As discussed below, the KCMI failed despite being set up with awareness of the principles of adaptive management. I argue that reasons for its

failure are inadequate implementation of the principles of ACM and the stifling influence of the specific cultural context. Plummer (2009) notes that culture is one of the variables which can affect the outcome of ACM schemes. 'Culture' for many authors denotes the culture of the indigenous peoples involved, but it is suggested here that in Indonesia two particular aspects of the broader culture (i.e., manifestations of people's attitudes, experiences and values) undermined the KCML The first relates to a weakly embedded sense of environmental responsibility, and the second to the prevalence of exploiting common property resources for private gain rather than in the public interest.

The first point has been explored by this author in previous publications (Cochrane 2007, 2009). Essentially, Indonesia did not experience the shift in perceptions of wilderness which took place in Europe and America during the 18th and 19th centuries, with scientific knowledge of the natural world and a romantic appreciation of its aesthetic value converging to inform the biocentric view which subsequently underpinned protected areas design and management. Meanwhile, a positive social construction of wilderness and the environment has only recently begun to take root in Indonesia. Its appearance is due partly to Indonesia's growing middle-classes now having experienced one or two generations' separation from their rural roots and finding that this distance conveys greater appreciation of the natural heritage, and partly to campaigning since the 1970s by environmental activists whose views have gradually become more mainstream. However, until this perspective becomes more widespread, the 'different perceptions on conservation' and 'lack of understanding' on conservation issues amongst both officials and community leaders, noted in relation to co-management of Marine Protected Areas in Indonesia by Suraji et al. (2012), will prevail.

The second point is even more fundamental. In most countries, it is assumed that a civil service free of corruption or bias will administer the state's assets for the good of the nation and as directed by government policy. Indonesia, however, has been notorious for the struggle between private and public interest, resulting in a frequent victory for the former, at considerable cost to society. It is common practice for civil servants and politicians to misappropriate financial benefits from state-owned resources: many studies have confirmed the significance of corruption in natural resource management (for instance RePPProt 1990; TI/EIA 1999; Wollenburg et al. 2009; Bachelard 2012; Burgess et al. 2012). The situation was exacerbated when more jurisdiction over resources was devolved to the regions after the demise of the centralized Suharto regime in 1998. Booth (2011) and Burgess et al. (2012) explain how this process resulted in greater opportunities and incentives for government officials to enrich themselves; as Jarvie et al. (2003: 10) remark: 'the old central government kleptocracy has been replaced by a plethora of district-level kleptocracies'. A short explanation of the Indonesian geographical administrative system will help to contextualize this: the main territorial divisions are provinces (*propinsi*), which are further divided into districts (*kabupaten*) and smaller divisions which need not concern us here. But while efforts to combat corruption have made progress, Indonesia's position at 100 in the Transparency International Corruption Perceptions Index indicate that there is still a long way to go (see also Alifandi and Jacques 2010; MacMillan 2011).

The devolution of power has caused particular tensions where land and resources are still owned by the national government and its agencies, such as with protected areas. This is partly because conflicting laws and weak direction from central government have resulted in uncertainty over who has responsibility for them (Wollenberg et al. 2009). District-level officials view these areas as containing resources which they cannot access and are thus disinclined to support protection policies, while local communities and in some cases *kabupaten* government departments continue to exploit the parks' resources illegally (Mulyana et al. 2010). Meanwhile, the Directorate-General of Forest Protection and Nature Conservation, which is responsible for national parks, has historically suffered from 'inadequate direction, supervision and support to field staff from more senior levels'

(IIED 1994: 8), and according to more recent reports still experiences weaknesses in conservation management and enforcement (Natusch and Lyons 2012).

Where national parks are concerned (as opposed to other forestry resources) the only legitimate revenues are minor sums from tourism which barely cover a fraction of the running costs. The parks are therefore a drain on national resources and receive accordingly limited budgetary support. On the other hand, global concern for biodiversity conservation means that international NGOs such as WWF, The Nature Conservancy, Birdlife International and Conservation International have been willing to invest substantial sums into management of Indonesia's protected areas (Sumarda 2003). When the Suharto dictatorship collapsed, exogenous agencies such as these – owning greater reserves of human and financial capital than national ones – were welcomed in to play a more prominent part in managing protected areas. Until then, they had provided technical assistance but their involvement had not been enshrined in legal management processes. In 2004, the Ministry of Forestry sanctioned a legal framework for collaborative management initiatives[1] (Purnomo and Lee 2005), including partnerships with local groups and investment by international NGOs. Some moved willingly into this newly created space: one was The Nature Conservancy (TNC), which became a key partner in the Komodo National Park, as described below.

The window of opportunity for systems renewal opened by the turmoil of the post-Suharto era soon closed, however, and as described above, the level of illegal exploitation accelerated. By 2010, a briefing paper from the Indonesia-based Centre for International Forestry Research commented that 'conservation in Indonesia has reached a deadlock. Protected areas – public assets that should be managed by government for the public good – are invaded, encroached upon and destroyed. Disputes arise regularly over who has usage rights in protected areas and for what purposes' (Mulyana et al. 2010: 1). The KCMI offers a stark illustration of this assessment. A brief history of tourism in the Komodo National Park and the creation of the KCMI will now be outlined.

Komodo National Park and the Collaborative Management Initiative

As well as creating a paradigm shift in attitudes to natural resource conservation, the 1982 World Parks Congress in Bali had a direct influence on Komodo in that it was declared a national park in 1980 specifically in time for the prestigious conference. Considerable investment in visitor infrastructure took place in order for it to be showcased as a post-conference field-trip. The national park covers 219,332 hectares between the major islands of Sumbawa to the west and Flores to the east, with a section on the mainland of Flores (UNESCO n.d.) (Figure 2). The principal islands of the archipelago are Komodo itself and the smaller Rinca; most Komodo lizards inhabit these two islands, with smaller populations reputed to inhabit remote coastal areas of the Flores mainland. A third island, Padar, had a population of dragons until they were driven to extinction by over-hunting of their prey species, and there are many smaller islands within the park.

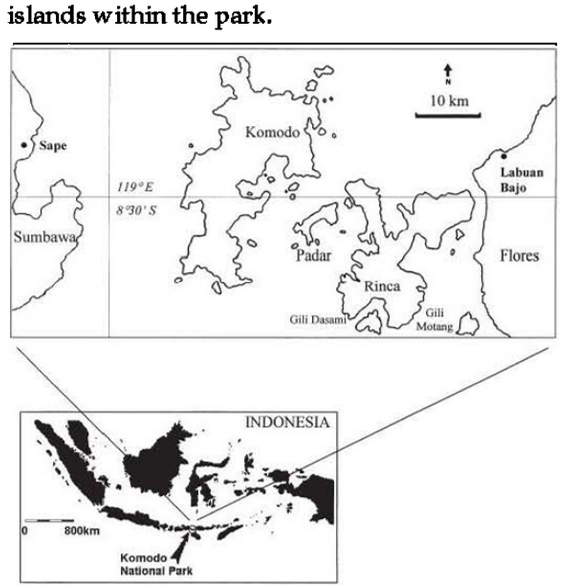

Figure 2. Location map of Komodo National Park

Source: Walpole and Goodwin (2001: 161)

The Komodo lizards (*Varanus komodensis*) are the largest in the world, at over 3 metres long; their size and yellow, flickering tongue form a plausible basis for Asian dragon myths. They are also a superb example of charismatic megafauna, a rarity in South East Asian wildlife tourism. While deliberate feeding of slaughtered goats to dragons as a tourist attraction ceased in 1994, individual dragons loiter about at visitor centres on both Komodo and Rinca, providing photo-opportunities and occasionally moving with enough energy to allow communicative staging by guides of how dangerous they are. While the creatures are certainly not safe, attacks on humans are few and far between (despite scare-mongering by news-hungry journalists, for example AP 2009; Time 2010). The extremely rare fatalities generally occur through complications due to untreated bite-wounds. Villagers are inconvenienced by the reptiles because they take domestic livestock rather than because of attacks on people, and there has never been a documented case of a tourist being attacked.

Nevertheless, the dragon's undisputed character as a ferocious carnivore has helped to establish it as the most iconic animal in eastern Indonesia. Its discovery by the outside world in 1912 encouraged the Dutch colonial administrators of Indonesia to confer protected status on the area in the 1930s (Hitchcock 1993) and stimulated further levels of protection throughout the 20th century: Biosphere reserve in 1977, national park in 1980, and World Heritage Site in 1991. Komodo was voted one of the 'New Seven Wonders of Nature' in 2011. The contest was controversial (e.g., Antara News 2011) and deemed spurious by many, but the months of campaigning by the Ministry of Tourism and Creative Industries raised the park's profile within Indonesia and resulted in a steep increase from 948 domestic arrivals in 2008 to 6,177 in 2011. Over the same period, international arrivals more than doubled from 20,814 to 41,833 (KNPA 2012).

By 2010, it was possible to visit Komodo Island as a day-trip from Bali via an hour's flight to Labuan Bajo and a 45-minute journey by speed-boat, a feat astonishing to earlier visitors (including the author) who necessarily took more adventurous routings. Gillsäter (1959) reports on a ten-day journey each way to Komodo from Surabaya (eastern Java) in the mid-1950s, and in the late 1970s, seven-day round trips were advertised from Bali (Dalton 1978). Throughout the 1970s and 80s, access to the park gradually improved, most significantly through development of the airport at Labuan Bajo on the western tip of Flores, from where Komodo could be reached in a 4-5 hour sea voyage. While in 1985 there were two flights per week on a 19-seat Twin Otter to a grass airstrip from Bima (Sumbawa), by 2010 there were four daily flights direct from Bali on medium-sized planes, and in 2012-13 the airport was undergoing expansion to enable larger planes and direct flights from Jakarta or overseas. Annual international visitor numbers rose from 15,000 in 1990 (WCMC/IUCN 1991) to 29,842 in 1997 (UNESCO 2003a): arrivals therefore quickly surpassed the 80-bed capacity of the two guest-houses on Komodo Island and one on Rinca. The response was envisaged by none of the early commentators on tourism at Komodo: instead of visitor facilities being created within the park and revenues accruing to local residents, a confluence of factors ensured that Labuan Bajo has become one of Indonesia's most rapidly growing tourist destinations.

It was always unlikely that facilities of an international standard would continue on the islands, given that those built in 1982 were run by a cooperative of park rangers with no tourism expertise. With no investment or skilled management, the guest-houses and small museum quickly deteriorated. Throughout Indonesia, a major deterrent to the development of a lucrative and self-sustaining wildlife tourism industry has been the legislative prohibition on private sector tourism ventures in the parks, and Komodo was no exception. Also, the islands within the park were even more isolated and lacking in basic amenities such as water, electricity and access by public transport than nearby mainland ports. This meant that the only possible locations for tourism facilities were on Sumbawa or Flores. In the early 1980s, Labuan Bajo was little more than a single street lined with dusty wooden houses and tiny shops –

described as 'a miserable place, dirty, no good food' in a popular guide-book (Dalton 1978). Its *raison d'être* was as a fishing port and the terminal for the inter-island ferry between Sumbawa and Flores. In the early 1990s, it seemed possible that Bima would become the gateway to Komodo because of its larger size and better facilities, but it entailed a much longer journey by land and by sea to the national park. Once the airport at Labuan Bajo was improved this inevitably became the hub, and the fishing village was transformed.

By the late 1990s, the majority of local economic activity associated with Komodo took place at Labuan Bajo (Walpole and Goodwin 2001). It is important to note that dragon tourism has not been the sole factor in the destination's rising popularity: the outstanding beauty of the coral reefs fringing the islands is also significant. There was one dive operator based in Labuan Bajo by the early 1990s (Muller, 1992) and diving in Komodo National Park was soon 'quickly gaining a reputation as one of Indonesia's undiscovered treasures' (Buckles 1995: 96). Tourism to Indonesia stagnated for a decade from 1997 because of the revolutionary unrest surrounding Suharto's downfall and attacks by Islamist hardliners, and visitors to Komodo stood at only 12,612 in 2001, but by 2010 there were seven dive operators in Labuan Bajo, and by 2012 this number had doubled. Tours offered were from one day to a week or more, with the longer ones using live-aboard dive-boats. From 2009 a donor-funded development programme began using interest in Komodo to spark tourism growth across Western Flores (SwissContact informant 1, 16/8/2010). The SwissContact project finished in 2013 but an EU-funded consortium of Indonesian NGOs is continuing their work by setting up a destination management organisation (Flores DMO informant 1, 29/11/12), and a Jakarta-based foundation with high-profile members from political and NGO backgrounds aims to promote Komodo and Flores and develop human resources (Yayasan Komodo Kita website, accessed 4 March 2013).

The KCMI has been intrinsic to this growth. A 1996 management framework for the national park produced by TNC saw two main benefits from marine ecotourism: to give residents an alternative source of income to over-exploitation of the park's resources; and to 'increase the motivation, political will and commitment to protect the park' by increasing visitor expenditure (Pet and Djohani 1996: 30). This document fed into a 25-year management plan produced in 2000 – also by TNC – which was detailed, far-sighted and based on sound research. It stated that 'the Forestry Department has granted permission to use this Park to try new innovative approaches in Park financing' (Pet and Yeager 2000a: 53), and that 'Komodo National Park has been selected by the Ministry of Finance as a pilot site to test new Park financing mechanisms and privatization of tourism management' (ibid: 78). It established zones for different types of use, and set out new institutional structures which recognized that 'given the complexity of ecological processes and competing resource uses in Komodo National Park, dynamic and effective management can only be achieved by securing the commitment and involvement of all resource users' (Pet and Yeager 2000b: 175). The influence of ACM principles is clear in the wording of this document.

Using the management plan as its guidelines and the 2004 ministerial decree as its legal foundation, the KCMI was duly established and began operations in 2005. A 2004 project document established its operational framework, i.e. a series of agreements between TNC, private entrepreneurs and public sector bodies which aimed to create the governance structure through a Collaborative Management Board (KCMB) and the financial management system through a private company, Putri Naga Komodo (PNK) (Gallegos et al. 2005). The key partners were the Komodo National Park Authority (KNPA), local government, and Putri Naga Komodo, a joint venture between TNC and a Malaysian businessman who had become a naturalized Indonesian citizen. The KCMB was supposed to include representatives from the Directorate General of Forest Protection, local government, the community, private sector, PNK, and the KNPA (UNESCO 2003b; KCMI 2004). TNC by this time had provided a range of support services to the park since 1995 (including surveillance,

monitoring and outreach programmes), although later regretted that they had become so tightly involved (PNK informant 5, 19/8/2010).

The intention was to make the national park financially self-sustaining within 7 years. A 'conservation fee' of US$ 15 per visitor accumulated in a Conservation Fund intended to provide an income to run the park. The fee was not mandatory, although this was not prominently explained. Visitors paid a further US$ 2 which went directly to KNPA, although in practice they simply paid an overall fee of $17 to PNK, with $2 per person returned to KNPA. The total was slightly higher than the amount deemed acceptable under a 'willingness-to-pay' survey at Komodo in the mid-1990s (Walpole et al. 2001), but the conservation benefits of the fee were communicated to visitors and its introduction announced in good time to be absorbed into tour package pricing. Expenditure until the Conservation Fund accrued sufficient sums was covered by the Global Environment Facility, World Bank, UNESCO and TNC, plus smaller amounts from other organizations. The money paid for patrol boats, tourism infrastructure such as visitor centres and dive-boat mooring buoys, community development and income-generation projects, interpretation materials for tourists and residents, awareness-raising about the new arrangements, establishment of governance structures (including capacity building) and supplements for the otherwise meagre salaries of park rangers and other KNPA staff.

The arrangements undoubtedly benefitted tourism. Dive operators welcomed the increased patrols which reduced bombing of the reefs and resulted in better-quality diving (Dive operator informant 3, 16/8/10). Tourism facilities and professionalism vastly improved, with guide training programmes and the production of interpretation materials. In contrast to other Indonesian protected areas, Komodo began to have the appearance and 'feel' of a well-managed, international standard national park. Respondents to the visitor survey in 2010 commented that 'we were happily surprised by the qualification and professionalism of the rangers' and 'it's better managed and maintained than other places in Indonesia', while 78% of visitors thought it was 'well conserved', as opposed to 65% who said this of the Tropical Rainforest of Sumatra WHS, while 64% thought it was 'well managed' (46% for the Sumatran WHS).

Local residents also saw benefits, in contrast to the early years of tourism to Komodo, when little economic benefit from the industry accrued locally. Hitchcock (1993) reported that their principal sources of income were traditionally fishing, hunting deer and harvesting tamarind; as commonly seen with peripheral communities, tourism services were provided by outsiders. Although by 1997 there were 29,840 visitors to the park – mostly foreigners – the majority arrived by cruise ship or plane and chartered boat, with little impact on the local economy. Visits during the 1980s and early 1990s by the author and others (e.g., Walpole and Goodwin 2001; Borchers 2009) revealed the poor state of villagers' housing and material goods. Borchers reports that in 2002, only one villager made a living from tourism alone through sale of wood-carvings to tourists.

Less than a decade later – after the KCMI had been in operation for 5 years – the situation had changed substantially. A micro-credit scheme had been made good use of (TNC informant 1, 19/8/2010). Carving of dragon models in Komodo village was widespread, local men had stalls near the tourist landing point selling externally-made souvenirs as well as their carvings, and the village was visibly more prosperous. National park figures showed that 'craftsmen' in the village had increased from 15 in 2009 to 50 in 2011, with 'sellers' rising from 60 to 119. Residents concurred with this, reporting that around 60% of village income now came from tourism, while throughout the park local men had the opportunity of working as guides and rangers. Overall, there was a generally positive attitude towards the national park from residents as far as tourism was concerned. The success of tourism and the KCMI was even provoking the 'magnet effect' often seen at protected areas, when programmes designed link prosperity to conservation by improving local incomes attract

inward migrants (Brandon and Wells 1992). Here, Borchers (2009: 276) reported on the 'surge of migration' to Komodo.

On the face of it, the system was a success. But by the time of the 2012 field visit, the conservation fee was no longer being collected and the Conservation Fund had been frozen. Instead of a clear single fee (albeit two bundled into one), tourists were now presented with a confusing list of different user fees including entry to the park, diving, snorkelling, camping, canoeing, filming and photography – with different rates for foreign and domestic tourists. Tour operators complained that the time available for purchasing tickets was erratic and limited. Personal experience corroborated this: during a 20-minute wait at the KNPA ticket office, staff ignored me while drinking coffee and chatting in a back office, despite being aware of my presence (for all they knew or apparently cared I was a tour leader needing 20 tickets for the park). This minor irritation was symptomatic of a significant malaise: the relationship between PNK and the KNPA had broken down, there had been violent demonstrations against the fisheries zoning system, and dive operators were concerned and frustrated. The KCMI had collapsed and park management was under strain. The next section examines what went wrong.

Death of the Komodo Collaborative Management Initiative

The architects of the KCMI had a good understanding of resilience principles: for instance a case study of Komodo described how the system was designed to create 'governance resilience' (Djohani 2009: 162), while the 2004 project document stated that 'adaptive management will be applied to reduce project vulnerability to change' (KCMI 2004: 37). In practice, though, not all of the success factors predicated by prior experience of ICDPs and ACM systems were introduced.

When the KCMI was examined against these criteria it was found to fall short in a number of ways. To start with successful elements, it avoided a failing of early ICDPs by not focussing exclusively on the community, while ensuring livelihood benefits to residents and thus being largely well-accepted by them. Through its main stakeholders it ensured pluralistic linkages at local and international scales, although national level linkages were missing or weak, as will be seen.

Turning to missing elements, a key factor identified by commentators was the need for mutual trust and transparency between stakeholders. This was undermined at an early stage in that trust between the two key partners in PNK – TNC and the Malaysian/Indonesian entrepreneur – quickly broke down (PNK informant 5, 19/8/10). TNC had only reluctantly become part of the concession management body, feeling that its expertise lay in providing technical support rather than in actively managing parks, let alone commercial tourism operations (ibid.) Meanwhile, confidence in PNK by other partners was undermined by xenophobia and fear of neo-colonialism: although TNC's principal representative was Indonesian, as the organisation was American and many of the consultants were foreigners, there were accusations that the park was being managed for tourism and of 'plotting to take over a national asset by stealth' even before PNK was established and the Malaysian businessman became involved (Dhume 2002). The dispute was a symptom of the absence of an effective layer of national-level stakeholder involvement – to some extent a deliberate exclusion, for reasons discussed below. The planned Collaborative Management Board was never established, or at least not to any effective extent.

Even during the successful years of the KCMI, it was apparent that a shared vision of programme outcomes and the processes designed to achieve these was also missing. There was an emphasis on infrastructure such as better mooring buoys and interpretation materials – acknowledged by dive operators as essential and well implemented – but less attention to genuine and persistent dialogic communications with other key stakeholders. Many people (from local residents to dive operators) seemed not to understand the management arrangements, and there were sure signs of a dependency culture: 'before, with TNC, there used to be money for projects but that's no longer available' (PNK informant 2, 14/8/10), and 'it's difficult to get any money out of them now'

(SwissContact informant 1, 16/8/10), while a community informant believed that 'only people related to PNK or national park staff' could borrow from the micro-credit fund. The effect was a gradual weakening of support by the community and dive operators for the KCMI.

A more contentious issue for local people than tourism was access to the rich fishing grounds. From the inception of the national park most fishing was banned in order to maintain stocks, although residents were permitted small-scale fishing in limited areas. From 1996, TNC had supported KNPA in eradicating destructive methods such as bombing of reefs and use of cyanide, resulting in a 2% annual increase in hard coral (Pet and Yeager 2000a: 28). Sincere attempts were made by TNC to consult with communities about zoning and use of traditional fishing methods, but the work appears to have ceased too soon (Marine biologist informant 1, 17/8/10). A local resident and former PNK liaison officer remarked that 'local fishing doesn't do any harm, it doesn't damage the corals', and had quit his post with PNK because it affected his relationship with his family and friends (Community informant 1, 13/8/10).

PNK had based the core ('no-take') fishing zones on identified spawning grounds, but local people were never sufficiently convinced of the need for these. One reason may be that the fishermen never see beneath the surface of the water so are unaware of the damage to reefs that even traditional methods can cause (Marine biologist informant 1, 17/8/10). They prefer to catch fish with roe, but 'they don't understand that if they always take those there won't be enough left to breed' (PNK informant 2, 14/8/10). The situation was complicated by the incursion of outsiders who were often blamed for unsustainable fishing methods, and by the complexity of residence patterns within the islands: communities rarely fit into neatly bounded geographical zones, and in this case family, social and business networks extend across the islands within the national park, those outside it, and to the mainland of Flores. For instance some people retain a house on Komodo Island as a mark of residence while their main home is elsewhere (PNK informant 1, 23/11/2012).

A particular grievance is felt by people living just outside the park who have no fishing rights there, and these were said to be responsible for a violent demonstration against KNPA in November 2012 (pers. obs.; Dive operator informant 4, 21/11/12; PNK informant 1, 23/11/12). If a strong management body had been in place, it is possible that the dispute could have been settled reasonably – or at least rebuffed by a united front. Although the main part of the demonstration (shouting, hurling stones and smashing windows at the national park office) was probably unnoticed by tourists, the impact of the illegal fishing is all too obvious: a popular dive spot was destroyed earlier in 2012 by bombing, with more frequent attacks since the KCMI collapsed (Hance 2012). In both 2010 and more so in 2012, dive operators and even tourists commented on how rangers appeared to find it easier to check dive permits on the dive-boats than to patrol the reefs and deter illegal fishing. These links between fishing and tourism illustrate the complexity of situations such as at Komodo, where social and ecological systems are inter-dependent and interventions may provoke unexpected outcomes.

The weakness of KNPA in the face of the demonstration was symptomatic of the principal reason for the demise of the KCMI, which was the overwhelming challenge of ensuring the centrality of the public sector to any ACM system. As explained above, central government in Indonesia grew weaker from the late 1990s while provincial and district agencies became more powerful. Disputed access to resources retained by central agencies but coveted by *kabupaten* ones is widespread, and the Komodo archipelago – rich in marine and touristic resources – is just one example of a conflictual zone, with tension between the district head and the head of the KNPA office (TNC informant 1, 19/8/10). Furthermore, the public sector in Indonesia has long been characterized by rigidity, weak horizontal linkages, stifling of energy and talent, and obduracy in the face of pressure to alter their *modus operandi*. The official welcome accorded wider stakeholder involvement in protected areas management from the late 1990s was rarely mirrored within Ministries and Directorates-General by a willingness to share resource

management with either NGOs or communities. The hierarchical structure of decision-making in Indonesia and reluctance to accept community participation in planning (also noted by Timothy 1999; Timothy and Tosun 2003) made it even less likely that government agencies would play a useful central role. This was why the architects of the KCMI attempted to neutralize the parasitic burden of KNPA by establishing a parallel management system and keeping the Conservation Fund separate, while trying to ensure the support of KNPA staff by official 'sweeteners' such as salary supplements. Unfortunately the arrangement backfired in that 'the rangers refused to do anything at all if TNC / PNK didn't pay' (TNC informant 1, 19/8/10).

The KCMI arrangement was based on a licence from the Ministry of Forestry to PNK as a concessionaire, but by 2012 the Ministry had unilaterally revoked the licence; the park authority contended that by getting involved in conservation rather than simply tourism PNK had overstepped the terms of their agreement (KNPA informant 1, 12/8/10). Other commentators ascribe more sinister motives to the Ministry of Forestry. When the KCMI first started operations tourism to Indonesia was at a low ebb, as described above, but from 2007 arrivals began to surge upwards again. The infrastructure laid by PNK ensured Komodo's readiness to benefit from this. Now, large sums of money began to flow inwards, but passed officials remorselessly by because of the financial arrangements established under the KCMI. 'Before PNK started, lots of the entry fee money went into people's pockets, but afterwards we reported everything, so there was nothing 'spare' outside their salaries' (PNK informant 4, 22/11/12). Indeed, one informant commented that 'the whole point of PNK was to try and prevent Forestry from getting their hands on the money from tourism, as from past experience it would not be put back into conservation' (PNK informant 5, 19/8/10).

By 2010, the Conservation Fund stood at US$ 1.5 million, earmarked for producing interest to run the national park in perpetuity. But by 2012, the Ministry of Forestry was experiencing a substantial drop in income because of a moratorium on new logging concessions, and it appears simply to have frozen the account and helped itself to the Fund to cover the gap – although others note that it may have been siphoned off in even less legitimate ways (McBeth 2011). Money to run PNK's operations on the ground dried up, and foreign donor agencies which had willingly supported the venture early on because it offered refreshing hope of good governance backed away.

Putting any kind of positive gloss on the affair is challenging. Government conservation authorities appeared unable to relinquish control over resources and accept the cross-institutional working required by successful ACM systems, while at the same time proving incapable – perhaps because of human resource weaknesses – of retaining a strong central role as mediator between the different stakeholders. As a well-placed informant put it, 'institutionally, KNPA was impossible to work with' (PNK informant 5, 19/8/2010). The outcome is that a system which offered a real prospect for managing Indonesia's natural resources for the long-term economic benefit of its population and the conservation of biodiversity had failed.

The Future of Komodo World Heritage Site?

To step briefly back from Komodo, a comparison with the Galapagos Marine Reserve, in Ecuador, may provide insightful. It shares many characteristics with Komodo in its blend of terrestrial and marine resources, its unique fauna, the competing claims for jurisdictional authority between different institutions, its importance for both tourism and fisheries, and in the rapid influx of outsiders drawn to a peripheral area to take advantage of the commercial opportunities. An evaluation by Heylings and Bravo (2007) showed that co-management has been effective in transforming attitudes and structures for resource governance here. An important lesson was 'the role that the legal framework has played in institutionalizing the co-management process; this has proved a vital factor in engineering institutional change and later in maintaining the resilience and credibility of such innovative arrangements'

(Heylings and Bravo 2007: 205). At Komodo, however, the early optimism that the park would be 'a pilot area for testing management and fiscal models that might not otherwise be consistent with current GOI [Government of Indonesia] park administrative policies' (KCMI 2004: 37) proved unfounded, in that the legal arrangements were either never properly established or simply swept aside when convenient.

On delving further into the murky history of the KCMI, it is evident that the seeds of its demise were fertilized by the weakly embedded conservation awareness and high levels of self-interest which prevail in the Indonesian civil service. A study of tourism impacts on the fragile ecosystem of the Arctic found that successful management depended on the willingness of stakeholders to minimize environmental damage (Chen 2011), and this is notably absent within the essential public sector in Indonesia. Similarly, efforts to implement the 2011 moratorium on new logging concessions have encountered challenges: commentators remark that its success rests on 'whether the Indonesian Government – with the participation of industry and civil society – takes the necessary steps to ensure that needed governance reforms are accomplished' (Austin et al. 2012). There is also criticism that arrangements to sell carbon credits under the REDD (Reducing Emissions from Deforestation and Degradation) scheme have been stymied by the 'tangle of bureaucracy, nationalism and corruption that is Indonesia' (Bachelard 2012).

Indications of a safe, long-term future for the iconic Komodo dragons and the glorious coral reefs that surround their rugged islands are not encouraging. The ACM model appears most successful in stable, democratic countries with good governance: Olssen et al (2004) applaud its application in Sweden and Canada, for instance. On the other hand, the model does not take into account an obstinate refusal of key stakeholders to work for the common good and manage resources based on sustainability principles. Measuring the situation against the Sphere of Tourism Resilience is no more encouraging: while market forces are being successfully harnessed (to the extent that development at Labuan Bajo is turning into a free-for-all), the other two elements – strong institutional leadership and stakeholder cohesion – are absent. The only possibilities for hope are that Komodo's raised profile within Indonesia may generate a domestic lobby of support for the World Heritage Site (and other national parks), and that lessons can be learned from the KCMI case to avoid similar failures elsewhere.

Here, the comments of Berkes (2009) are insightful. One of the early architects of ACM, he notes efforts by the Centre for International Forestry Research to develop tactics for coping with 'weak and uncertain institutional settings' (Berkes 2009: 1699), one of which is to include more partners than necessary in advanced economies in order to ensure back-up. Returning to the assessment of coastal resource management in Indonesia by Siry (2011: 476), he too advocates a broad range of stakeholders and structures which allow them to 'participate equally in negotiation and management decisions'. In the case of the KCMI, reliance on a small number of partners meant there were no substitutes when disagreements arose, while several key stakeholders were excluded from effective decision-making. In contrast, the long-running CMI at Bunaken Marine Protected Area in North Sulawesi (also in Indonesia) appears to have been successful in engaging local community, private sector and public sector stakeholders by ensuring clarity of vision and shared objectives and taking a long-term approach to building informed participation and capacity (Erdmann et al. n.d.). Elsewhere in South East Asia, a CMI at Virachey National Park in Cambodia was found to have improved relationships between the community and park authorities, although government officials were reluctant to accept the equal partnership of the local community (The Learning Institute n.d.). As in Indonesia, however, when the government decided that the resources should be used in a different way, they simply ignored the CMI, in this case allocating a concession for mining exploration over half the park to an Australian mining company (Lang 2011).

The Komodo CMI appears to have failed partly because of flaws in its design and execution.

Ultimately, however, responsibility for biodiversity conservation through protected areas and ensuring greater distributional equality to local populations lies with a country's government. Only if this is able to muster the political will necessary to facilitate the constructive use of all substantive offers of support, whether from national or international sources, can complex socio-ecological systems such as Komodo be sustainably managed.

Finally, while a great deal has been written about the principles and theoretical application of ACM styles of resource management, there is a dearth of good quality and up-to-date analyses of how collaborative management initiatives are working in practice, particularly those involving tourism. A key area for advancing our understanding of successful management of tourism in protected areas is thorough research into the success or weaknesses of such initiatives.

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Endnote

1. Ministerial Decree P.19/Menhut-II/2004 on Collaborative Management of Nature Reserves and Protected Areas

References

AKBULUT, B. and SOYLU, C. (2012). An Inquiry into Power and Participatory Natural Resource Management. *Cambridge Journal of Economics* 36: 1143–1162.

ALIFANDI, A. and JACQUES, I. (2010). *Indonesia: What Role as a Contemporary Global Actor?* Report on Wilton Park Conference WP1019. March 1-4. Wiston House, Sussex, UK. Available at http://www.wiltonpark.org.uk/wp-content/uploads/wp1019-report.pdf – Accessed on 28 October 2012.

ANTARA NEWS (2011). NTT Hopes Voters to Continue Supporting Komodo in N7W. August 16. Available at http://www.antaranews.com/en/news/74813/ntt-hopes-voters-to-continue-supporting-komodo-in-n7w – Accessed on 21 December 2012.

ASSOCIATED PRESS (AP) (2009). Komodo Dragons Attack. *Indonesian Nature Conservation Bulletin* 12 (May 22): 20a.

AUSTIN, K., SHEPPARD, S. and STOLLE, F. (2012) *Indonesia's Moratorium on New Forest Concessions*. WRI Working Paper. Washington DC. World Resources Institute.

BACHELARD, M. (2012). *Indonesia's Forests of Corruption*. Sydney Morning Herald. Available at http://www.smh.com.au/environment/indonesias-forests-of-corruption-20120610-203sk.html – Accessed on 21 December 2012.

BERKES, F. (2009). Evolution of Co-management: Role of Knowledge Generation, Bridging Organisations and Social Learning. *Journal of Environmental Management* 90: 1692–1702.

BOOTH, A. (2011). Splitting, Splitting and Splitting Again: A Brief History of the Development of Regional Government in Indonesia since Independence. *Bijdragen tot de Taal-, Land- en Volkenkunde* 167(1): 31–59.

BORCHERS, H. (2009). Dragon Tourism Revisited: The Sustainability of Tourism Development in Komodo National Park. In Hitchcock, M., King, V.T. and Parnwell, M.J. (Eds) *Tourism in South East Asia: Challenges and New Directions*. Copenhagen. Nias Press: 270–285.

BOWN, N.K., GRAY. T. S. and STEAD, S. M. (2013). Co-management and Adaptive Co-management: Two Modes of Governance in a Honduran Marine Protected Area. *Marine Policy* 39: 128–134.

BRANDON, K. and WELLS, M. (1992). Planning for People and Parks: Design Dilemmas. *World Development* 20(4): 557–570.

BUCKLES, G. (1995). *The Dive Sites of Indonesia*. London. New Holland.

BURGESS, R., HANSEN, M., OLKEN, B., POTAPOV, P. and SIEBER, S. (2012). *The Political Economy of Deforestation in the Tropics*. Centre for Climate Change Economics and Policy Working Paper No. 91. Available at http://www2.lse.ac.uk/GranthamInstitute/publications/WorkingPapers/Working%20Papers/70-79/WP79-The-political-economy-of-deforestation-in-the-tropics.pdf – Accessed on 21 December 2012.

CHEN, J. (2011). Arctic Tourism: Perspectives from the Industry Professionals. Presentation at 29th EuroCHRIE conference, Dubrovnik, 19-22 October. Available at http://www.eurochrie.org/downloads/EuroCHRIE_comprehensive_V7.pdf_ – Accessed on 1 November 2012.

COCHRANE, J. (2007). Ecotourism and Biodiversity Conservation in Asia: Institutional Challenges and Opportunities. In Higham, J. (Ed) *Critical Issues in Ecotourism*. Oxford. Elsevier Butterworth Heinemann: 287–307.

COCHRANE, J. (2009). National Parks in Indonesia: an Alien Construct. In Frost, W. and Hall, M. (Eds) *Tourism and National Parks: International Perspectives on Development, Histories and Change*. London. Routledge: 211–224.

COCHRANE, J. (2010). The Sphere of Tourism Resilience. *Tourism Recreation Research* 35(2): 173–186.

DALTON, B. (1978). *Indonesia Handbook* (Second Edition). California. Moon Publications.

DHUME, S. (2002). Jurassic Showdown. *Far Eastern Economic Review* (May 16).

DIDUCK, A., SINCLAIR, A.J., HOSTETLER, G. and FITZPATRICK, P. (2012). Transformative Learning Theory, Public Involvement, and Natural Resource and Environmental Management. *Journal of Environmental Planning and Management* 55(10): 1311–1330.

DJOHANI, R. (2009). Governance in Indonesia's Marine Protected Areas: A Case Study of Komodo National Park. In Cribb, R. and Ford, M. (Eds) *Indonesia Beyond the Water's Edge: Managing an Archipelagic State*. Singapore. Institute of Southeast Asian Studies: 157–169.

DUDLEY, N. (Ed) (2008). *Guidelines for Applying Protected Area Management Categories*. Gland, Switzerland. International Union for the Conservation of Nature and Natural Resources.

ERDMANN, M., MERRILL, P.R., MONGDONG, M., WOWILING, M., PANGALILA, R. and ARSYADI, I. (n.d.). The Bunaken National Marine Park Co-Management Initiative. Available at http://rmportal.net/groups/cbnrm/cbnrm-literature-for-review-discussion/the-bunaken-national-marine-park-co-management-initiative/view – Accessed on 18 April 2013.

FENNELL, D.A. (2006). Evolution in Tourism: The Theory of Reciprocal Altruism and Tourist-host Interactions. *Current Issues in Tourism* 9(2): 105–124.

FOLKE, C. (2006). Resilience: The Emergence of a Perspective for Social–ecological Systems Analyses. *Global Environmental Change* 16: 253–267.

GALLEGOS, V.L., VAAHTERA, A. and WOLFS, E. (2005). *Sustainable Financing for Marine Protected Areas: Lessons from Indonesian MPAs. Case studies: Komodo and Ujung Kulon National Parks*. Student research report for Environmental & Resource Management module. Amsterdam: Vrije Universiteit. Available at http://www.komodonationalpark.org/downloads/Sustainable_Financing_of_MPAs.pdf – Accessed on 21 December 2012.

GILLSÄTER, S. (1959). *We Ended in Bali*. London. George Allen and Unwin.

HANCE, J. (2012). Carnage in Komodo: World-Famous Reef Destroyed by Poachers' Bombs. *Indonesian Nature Conservation Bulletin* 15(April 25): 18a.

HEYLINGS, P. and BRAVO, M. (2007). Evaluating Governance: A Process for Understanding how Co-management is Functioning, and why, in the Galapagos Marine Reserve. *Ocean and Coastal Management* 50: 174–208.

HITCHCOCK, M. (1993). Dragon Tourism in Komodo, Eastern Indonesia. In Hitchcock, M., King, V.T., and Parnwell, M. (Eds) *Tourism in South-East Asia*. London. Routledge: 303–316.

HORIGUE, V., ALIÑO, P.M., WHITE, A.T. and PRESSEY, R.L. (2012). Marine Protected Area Networks in the Philippines: Trends and Challenges for Establishment and Governance. *Ocean and Coastal Management* 64: 15-26.

INTERNATIONAL INSTITUTE FOR ENVIRONMENT AND DEVELOPMENT (IIED) (1994). *Environmental Synopsis of Indonesia*. London. Prepared for the Overseas Development Administration.

JARVIE, J., KANAAN, R., MALLEY, M., ROULE, T. and THOMSON, J. (2003). *Conflict Timber: Dimensions of the Problem in Asia and Africa*. Report for USAID by Associates in Rural Development, Inc.

JONES, L., LUDI, E., AMSALU, A., ARTUR, L., BUNCE, M., MATHESON, S., MUHUMUZA, W. and ZACARIAS, D. (2013). *The Political Economy of Local Adaptation Planning: Exploring Barriers to Flexible and Forward-looking Decision-Making in Three Districts of Ethiopia, Uganda and Mozambique*. London. Overseas Development Institute. Available at http://www.odi.org.uk/publications/7289-political-economy-adaptation-flexible-forward-decision-making-ethiopia-uganda-mozambique – Accessed on 24 March 2013.

KOMODO COLLABORATIVE MANAGEMENT INITIATIVE (KCMI) (2004). *Project Document*. Available at http://www.thegef.org/gef/sites/thegef.org/files/gef_prj_docs/GEFProjectDocuments/Biodiversity/Indonesia%20-%20Komodo%20National%20Park/10-22-04%20Komodo%20Project%20Doc%20Part%201.pdf_– Accessed on 28 December 2012.

KOMODO NATIONAL PARK AUTHORITY (KNPA) (2012). *Report*. Labuan Bajo, Flores.

LANG, C. (2011). Can REDD save Virachey National Park? Available at http://www.redd-monitor.org/2011/03/10/can-redd-protect-virachey-national-park-in-cambodia/ – Accessed on 18 April 2013.

LEYS, A.J. and VANCLAY, J.K. (2011). Social Learning: A Knowledge and Capacity Building Approach for Adaptive Co-management of Contested Landscapes. *Land Use Policy* 28: 574–584.

MACMILLAN, J. (2011). *Reformasi* and Public Corruption: Why Indonesia's Anti-corruption Agency Strategy should be Reformed to Effectively Combat Public Corruption. *Emory International Law Review* 25: 587–630.

MAKINO, M., MATSUDA, H. and SAKURAI, Y. (2009). Expanding Fisheries Co-management to Ecosystem-based Management: A Case in the Shiretoko World Natural Heritage Area, Japan. *Marine Policy* 33: 207–214.

MCBETH, J. (2011). *Dragons Bitten by Corruption.* Singapore. Straits Times. Available at http://lamien.multiply.com/journal/item/611/Komodo-Dragons-bitten-by-corruption?&show_interstitial=1&u=%2Fjournal%2Fitem_ – Accessed on 5 January 2013.

MCNEELY, J.A. and MILLER, K.R. (1984). *National Parks, Conservation and Development: the Role of Protected Areas in Sustaining Society*, Smithsonian Institute Press, Washington, DC (Proceedings of the World Congress on National Parks and Protected Areas, Bali, 11-22 October 1982).

MORENO-SÁNCHEZ, R. and MALDONADO, J.H. (2010). Evaluating the Role of Co-management in Improving Governance of Marine Protected Areas: An Experimental Approach in the Colombian Caribbean. *Ecological Economics* 69: 2557–2567.

MULLER, K. (1992). *Underwater Indonesia: a Guide to the World's Greatest Diving*. Singapore. Periplus Editions.

MULYANA, A., MOELIONO, M., MINNIGH, P., INDRIATMOKO, Y., LIMBERG, G., UTOMO, N.A., IWAN, R., SAPARUDDIN and HAMZAH (2010). *Establishing Special Use Zones in National Parks - Can it Break the Conservation Deadlock in Indonesia?* Bogor. CIFOR brief 1. Available at http://www.cifor.org/publications/pdf_files/infobrief/001-Brief.pdf - Accessed on 23 December 2012.

NATUSCH, D. J.D. and LYONS, J.A. (2012). Exploited for Pets: the Harvest and Trade of Amphibians and Reptiles from Indonesian New Guinea. *Biodiversity Conservation* 21: 2899–2911.

NURSEY-BRAY, M. and RIST, P. (2009). Co-management and Protected Area Management: Achieving Effective Management of a Contested Site, Lessons from the Great Barrier Reef World Heritage Area. *Marine Policy* 33: 118– 127.

OLSSEN, P., FOLKE, C. and BERKES, F. (2004). Adaptive Co-management for Building Resilience in Social-ecological Systems. *Environmental Management* 34(1): 75–90.

PET, J. and DJOHANI, R. (1996). *A Framework for Management of the Marine Resources of Komodo National Park and Surrounding Marine Areas in Eastern Indonesia.* Bali. The Nature Conservancy.

PET, J. and YEAGER, C. (Eds) (2000a). *25 Year Master Plan for Management: Komodo National Park, Book 1.* Labuan Bajo. Komodo National Park Authority.

PET, J. and YEAGER, C. (Eds) (2000b). *25 Year Master Plan for Management: Komodo National Park, Book 2 - Data & Analysis.* Labuan Bajo. Komodo National Park Authority.

PLUMMER, R. (2009). The Adaptive Co-Management Process: an Initial Synthesis of Representative Models and Influential Variables, *Ecology and Society* 14(2), article 24. Available at http://www.ecologyandsociety.org/issues/article.php/3130_- Accessed 23 December 2012.

PLUMMER, R. and ARMITAGE, D. (2007a). Charting the New Territory of Adaptive Co-management: A Delphi study, Ecology and Society, 12(2), article 10. Available at http://www.ecologyandsociety.org/vol12/iss2/art10/_- Accessed 23 December 2012.

PLUMMER, R. and ARMITAGE, D. (2007b). A Resilience-based Framework for Evaluating Adaptive Co-management: Linking Ecology, Economics and Society in a Complex World. *Ecological Economics* 61: 62–74.

PLUMMER, R. and FENNELL, D. (2009). Managing Protected Areas for Sustainable Tourism: Prospects for Adaptive Co-management. *Journal of Sustainable Tourism* 17(2): 149-168.

PURNOMO, A. and LEE, R. (2005). The Winds of Change - Recent Progress towards Conserving Indonesian Biodiversity. *Indonesian Nature Conservation Bulletin* 8 (3).

REGIONAL PHYSICAL PLANNING PROGRAMME FOR TRANSMIGRATION (REPPPROT) (1990). *The Land Resources of Indonesia.* Overseas Development Administration/Department of Transmigration, Jakarta.

SCHULTZ, L., DUIT, A. and FOLKE, C. (2010). Participation, Adaptive Co-management, and Management Performance in the World Network of Biosphere Reserves. *World Development* 39(4): 662–671.

SIRY, H.Y. (2011). In Search of Appropriate Approaches to Coastal Zone Management in Indonesia. *Ocean and Coastal Management* 54: 469–477.

SUMARDA, E.A. (2003). *Public Sector Support and Management of Protected Areas in Indonesia.* Presentation at Sustainable Finance panel, 5th World Parks Congress, Durban, South Africa.

SURAJI, RUCHIMAT, T., SAAD, S. and WIBISANA, S. (2012). *New Paradigm of Co-Management of MPAs in Indonesia.* Presentation at Aquatic Biodiversity International Conference, 4-7 October 2011, Sibiu, Romania. Available at http://edukasi.kompasiana.com/2012/01/06/new-paradign-of-co-management-of-mpas-in-indonesia-lessons-learned-from-coremap-428702.html_- Accessed on 22 December 2012.

THE LEARNING INSTITUTE (n.d.). Indigenous peoples and protected areas: a collaborative management learning network in Southeast Asia. Available at http://www.learninginstitute.org/index.php?page=cmln_main – Accessed on 18 April 2013.

TELAPAK INDONESIA / ENVIRONMENTAL INVESTIGATION AGENCY (TI/EIA) (1999). *The Final Cut - Illegal Logging in Indonesia's Orangutan Parks.* Jakarta. TI/EIA.

TIME (2010). *Postcard: Komodo Island. Time* 175(20): 4, 24 May.

TIMOTHY, D. J. (1999). Participatory Planning: A View of Tourism in Indonesia. *Annals of Tourism Research* 26(2): 371–391.

TIMOTHY, D.J. and TOSUN, C. (2003). Appropriate Planning for Tourism in Destination Communities: Participation, Incremental Growth and Collaboration. In Singh, S., Timothy, D.J. and Dowling, R.K. (Eds) *Tourism in Destination Communities*. Reading. CABI Publishing: 181–204.

TUYEN, T.V, ARMITAGE, D. and MARSCHKE, M. (2010). Livelihoods and Co-management in the Tam Giang Lagoon, Vietnam. *Ocean & Coastal Management* 53: 327–335.

UNESCO (2003a). *State of Conservation of the World Heritage Properties in the Asia-Pacific Region: Indonesia, Komodo National Park*. Paris. UNESCO: 224–228

UNESCO (2003b). *Linking Biodiversity Conservation and Sustainable Tourism in World Heritage Sites: Site Assessment Report Komodo National Park, Indonesia*. Paris. UNESCO.

UNESCO (n.d.). World Heritage List. Available at http://whc.unesco.org/en/list/ – Accessed on 31 October 2012.

URQUHART, D. (2012). The Null Hypothesis: Co-management Doesn't Work. *Rangifer* 20: 103–112.

WALKER, B., HOLLING, C.S., CARPENTER, S.R., and KINZIG, A. (2004). Resilience, Adaptability and Transformability in Social–ecological Systems. *Ecology and Society* 9(2).

WALPOLE, M. and GOODWIN, H. (2001). Local Attitudes towards Conservation and Tourism Around Komodo National Park, Indonesia. *Environmental Conservation* 28(2): 160–166.

WALPOLE, M., GOODWIN, H. and WARD, K.G.R. (2001). Pricing Policy for Tourism in Protected Areas: Lessons from Komodo National Park, Indonesia. *Conservation Biology* 15(1): 218–227.

WORLD CONSERVATION MONITORING CENTRE / INTERNATIONAL UNION FOR THE CONSERVATION OF NATURE (WCMC / IUCN) (1991). *World Heritage Nomination – IUCN Summary, 609: Komodo National Park, Indonesia*. Available at http://whc.unesco.org/en/list/609 – Accessed on 31 October 2012.

WELLS, M., BRANDON, K. with HANNAH, L. (1992). *People and Parks: Linking Protected Area Management with Local Communities*. Washington, DC. The World Bank.

WILSON, D.C., AHMED, M., SIAR, S.V. and KANAGARATNAM, U. (2006). Cross-scale Linkages and Adaptive Management: Fisheries Co-management in Asia. *Marine Policy* 30: 523–533.

WOLLENBERG, E., MOELIONO, M. and LIMBERG, G. (2009). Riding the Rapids: Synthesis and Conclusion. In Moeliono, M., Wollenberg, E. and Limberg, G. (Eds) *The Decentralisation of Forest Governance: Politics, Economics and the Fight for Control of Forests in Indonesian Borneo*. London. Earthscan: 281–298.

WORAH, S. (2002). The Challenge of Community-Based Protected Area Management. *Parks* 12(2): 80–90.

YAYASAN KOMODO KITA (2013). Available at http://www.komodokita.org/ – Accessed on 4 March 2013.

ZACHRISSON, A. (2009). The Designation of Fulufjället National Park: Efficient Co-Management through Downward Accountability? *Local Environment* 14(3): 259–271.

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