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Bringing social and cultural considerations into environmental management for vulnerable coastal communities: Responses to environmental change in Xuan Thuy National Park, Nam Dinh Province, Vietnam

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ABSTRACT

This paper elaborates the importance of considering social and cultural factors within management responses to environmental change in coastal areas. The case study taken is Xuan Thuy National Park in Nam Dinh Province, Vietnam. This is a marginalised coastal area where rising sea levels, increasing storm surges and saltwater intrusion place pressure on coastal ecosystems, yet where communities continue to rely on these same ecosystems for agriculture- and aquaculture-related livelihoods. We interview stakeholders in Xuan Thuy National Park, connecting these with a narrative review of existing research into social and environmental change in the park to understand research gaps and challenges for vulnerable coastal areas like the Nam Dinh coast. Based on our findings, we suggest that whilst the effects of a changing environment on physical health and economic activity are increasingly well understood, effects on wellbeing and social relations can be even more immediate and profound in daily living. In turn, we argue environmental management has a crucial role to play not only for ecosystem-based adaptation, but also in sustaining wellbeing and allowing culturally meaningful practices to continue – especially in coastal regions where changes can be even more intense and immediate. However, we caution that whilst techno-scientific solutions grounded in environmental management do have significant potential in reducing impacts of extreme events and slower-onset environmental changes, they must not divert attention away from structural issues that can make some people or areas more vulnerable in the first instance.

1. Introduction

1.1. Overview

This paper considers how the social and cultural implications of environmental change may connect with techno-scientific responses to climate change adaptation and environmental protection, through the case of Xuan Thuy National Park in Vietnam. Human development relies on services such as water circulation, climate regulation and disease control provided by nature (Millennium Ecosystem Assessment, 2005). If these services are damaged or managed incorrectly, there can be consequences for development and wellbeing (Su et al., 2010). The 'health' of an ecosystem – which Costanza (1992) defines as the ability of an ecosystem to sustain itself as a result of its productivity, structure and diversity, and resilience to outside stresses – is one way to understand the ability of an ecosystem to support people. Such ecosystem health takes on additional significance in low-to-middle income country (LMIC) contexts, where direct reliance on ecosystems for sustenance or livelihood may be greater (Roberts et al., 2012). Moreover, the role of ecosystems in reducing impacts of extreme events and slower-onset changes through ecosystem-based adaptation - for instance, stormwater retention, heat reduction and carbon sequestration (Munang et al., 2013; UNEP, 2017) – further reinforces the importance of environmental protection to a sustainable society. In coastal and marine areas, Leslie and McLeod (2007) indicate that greater biodiversity may be linked to greater ecosystem functioning, hence increasing potential for ecosystem-based adaptation. Mangroves, salt marshes, coral reefs, beaches, dunes and seagrass habitats have all been argued to have a

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role in reducing wave energy, increasing sedimentation and reducing erosion and movement (e.g. Jones et al., 2012; Spalding et al., 2014; UNEP, 2017). Spalding et al. (2014) list formation of marine protected areas, habitat restoration, manged realignment of coastal ecosystems, and hybrid natural and 'hard' engineering as management strategies that may facilitate coastal ecosystem-based adaptation.

Yet in LMIC contexts, additional imperatives need to be balanced while working towards the adaptation gains that come from preserving healthy ecosystems. A drive for environmental protection or biodiversity conservation must be set against more immediate needs relating to poverty, sanitation, drinking water, infrastructure supply and livelihood (Seto et al., 2012). The is even tougher in coastal settings, where risks from rising sea levels and exposure to storms are intensified (McGranahan et al., 2007; Saleem Khan et al., 2012) and ecosystems may be a crucial 'first line of defence' in physically mitigating extreme events deriving from the sea, yet access to coastal resources and ecosystems is vital for communities' livelihoods and survival (Aguilera et al., 2015).

Environmental managers thus have to manage coastal ecosystems in a way that maximises adaptation potential through specific actions, whilst also allowing the most marganalised members of society access to these same natural resources to sustain livelihood and development. For those setting policy at the national or regional level, this means finding ways to link adaptation policy and implementation with poverty reduction and vulnerability reduction measures in different social and economic sectors (e.g. Klein, 2010; Roberts, 2010).

1.2. Theoretical context: vulnerability as a social process

This challenge of linking adaptation actions with development imperatives is further complicated by socio-political processes, which arguably contribute to the differences in vulnerability and uneven development that exist within society. We understand vulnerability as the exposure of groups or individuals to stress as a result of extreme events and environmental changes (Adger, 1999a), depending on their social, economic and political characteristics (Oulahen et al., 2015). As Smith (2006: np) argues, "there is no such thing as a natural disaster. In every phase and aspect of a disaster […] the contours of disaster and the difference between who lives and who dies is to a greater or lesser extent a social calculus." Factors such as access to finances, education levels, and social capital have all been argued to affect vulnerability to environmental changes (e.g. Cutter et al., 2003; Adger et al., 2004; Oulahen et al., 2015). It has also been demonstrated that groups marginalised through income, ethnicity or gender are less likely to have access to these resources that can reduce vulnerability, and hence bear a disproportionate burden of the negative effects of climate-related hazards (e.g. Klinenberg (2002) and Byrne et al. (2016) on heat; Laska and Morrow (2006) on hurricanes). These studies indicate this disparity is relevant not only at the national level, where it is understood that less affluent nations who have done the least to contribute to climate change will be affected hardest and earliest (Stern, 2007), but also within regions and municipalities. There is hence a concern with spatial justice (Soja, 2010) in terms of fairness in allocation of resources, services and access across society. This may involve fairness in the distribution of benefits and hazards across space (Shrader-Frechette, 2002), and also in the *processes* through which decisions are made (Paavola and Adger, 2006).

The core theoretical and practical concern of this paper is therefore to understand means through which these social and cultural drivers of vulnerability and the ways in which they affect people in their daily lives may be taken into account within the kind of environmental management processes outlined in Section 1.1. The aim is to understand how the most vulnerable members of society can have equitable access to ecosystems in a way that (a) reduces physical exposure to extreme events through the adaptation benefits realised by effective management, yet (b) allows realisation of tangible benefits that allow improvement of socio-economic status and hence reduction of vulnerability. This balance is especially significant in ecosystem-based adaptation and biodiversity protection discussions, where it has been claimed that issues of how social relations and cultural practices can both be affected by and guard against environmental change have been sidelined, if not actively suppressed, in the drive for consensus on rapid practical action. Discourses of 'ecosystem services' aim to build consensus on the value of ecosystems to society and gain broad-based buy-in for environmental protection actions (e.g. Perrings et al., 2011). Yet such thinking has been argued to make the complex social processes underpinning environmental issues appear as simpler techno-scientific issues (Norgaard, 2010), or even intensify existing inequalities by replicating current market-based ways of thinking (Kosoy and Corbera, 2010). Similarly, the proliferation of political interest in 'resilient' social and ecological systems has led to concerns (e.g. Lockie, 2016; Kaika, 2017) that questions of fairness in exposure to environmental changes have gone unaddressed in favour of maintaining the social and political status quo.

Equitable ecosystem-based adaptation of the kind discussed in Section 1.1. hence means not only preserving access to ecosystems for the most vulnerable, but also creating room in governance processes for reflection on what it is that leads to uneven development so that this can be addressed as part of climate adaptation and development policy measures. Whilst 40% of the world population lives in coastal regions (UN, 2017), policy and governance procedures to balance these competing pressures are far less developed for marine environments than they are for land (e.g. Boyes and Elliot, 2014; Mabon et al., 2017). Coastal communities may be more exposed to environmental hazards, and can also be more marginalised socially and politically due to their peripheral location (Allen, 2006; Chang et al., 2015). In LMICs, reliance on coastal ecosystems may be especially high (Saleem Khan et al., 2012), and there is concern that marine resource development in the national interest may have negative impacts at the community level (Mai et al., 2008). In a coastal context, socially just adaptation to climate-related hazards therefore means understanding how benefits brought by the sea at a national or international level balance with well-being and socio-cultural values locally.

1.3. Significance and aims

The aim of this study is therefore to elaborate challenges that arise when we consider social and cultural factors within environmental management frameworks, and to suggest policy and management actions that ensure the most vulnerable are not further disadvantaged within climate adaptation actions. The value of our study lies in bridging more technical, scientific and managerial understandings of climate adaptation responses with thinking on the community-level implications of economic, social and environmental change.

We assess actions and processes in Xuan Thuy National Park (XTNP), Nam Dinh Province, Vietnam (Section 2). This is an environmentally and socially vulnerable coastal region, where extreme events and environmental changes are already being linked to climate change. XTNP and Nam Dinh Province more widely is a location where policymakers and governors need to balance socio-economic development, climate change adaptation and environmental protection imperatives in the present. A single case study of course cannot provide 'solutions' which can be applied everywhere. We use the XTNP case to contribute to theory (Yin, 1984), especially reconciling scholarly thinking on justice and vulnerability with environmental management strategies based on thinking in terms of ecosystem health. Our findings add insight into the lived experience of a changing environment. This acts as a starting point for reflection on how discourses of climate change adaptation rooted at the regional, national or international level sit with the daily experiences of the people these policies ought to benefit – namely, physically and socially marginalised people living in a coastal community where extreme events and also longer-term