An (Urban) Political Ecology approach to Small-Scale Fisheries in the Global South

Alin Kadfak
Swedish University of Agricultural Sciences
alin.kadfak@slu.se

Patrik Oskarsson
Swedish University of Agricultural Sciences
patrik.oskarsson@slu.se

An (Urban) Political Ecology approach to Small-Scale Fisheries in the Global South

Abstract

This article applies an (Urban) Political Ecology lens to an urban fishing community in India to understand how people are affected by coastal transformations involving intertwined socio-economic and biophysical processes. Despite urbanization proceeding swiftly across most of the world, the literature on Small-Scale Fisheries has only partially included urbanization processes in its analysis. This is unfortunate, we argue, since urban fisheries can enrich the field by providing insights into complex settings of emerging economic opportunity colliding with traditional livelihoods and community belonging. In such settings rapid biophysical shifts, including those of built nature, become intimately entangled with social transformations under intensifying, politically contested, economic activities. To capture these dynamics, we construct a framework consisting of three theoretical concepts from Political Ecology and Urban Political Ecology; the assemblage of the social and the natural, contested urban landscapes, and identity politics. We conclude that theoretical insights from (Urban) Political Ecology can help Small-Scale Fisheries research understand the inter-relatedness of human and biophysical environments in co-constituting contested coastal transformations. This is since fishing lives and livelihoods do not only depend on the ability to access and control marine resources, but also on the possibilities to stake claims over dynamic coastal spaces, under the influence of wider political and economic transitions like those generated by urbanisation.

1. Introduction

> We will not let our children go fishing. If they can get better education then they will get a job somewhere else. However, some children that do not do well in school they might come back to fishing (Group discussion with fishermen: 10-04-2013).

> The newly built cement harbour is really risky for our boats. We know that more trawlers are being built every day, and they need space to dock. We have very small voices. We will have to keep fighting to keep these net-mending and social spaces from the new harbour compound even though the whole area will be inside the harbour fence (Small-scale fisherman: 2-04-2014).

> I am afraid that new development projects like the new fishing harbour will bring government authorities to Meenu-Bengre. If so, the government might ask us to leave this place (Group discussion with young fishermen: 11-12-2014).

These citations from the urban fishing village we refer to as Meenu-Bengre[1] show that how to catch fish was not at the centre of concerns. The responses, we argue, illustrate Meenu-Bengre's transformation from a relatively isolated small-scale fishing community to a peri-urban part of Mangaluru[2] city as urbanisation and attendant economic and political changes

---

[1] We have changed the name of the village to preserve the confidentiality of residents.

[2] Mangalore officially changed its name to Mangaluru in 2014. It is a medium-sized city in the state of Karnataka in southern India.

reached the village over the past few decades. In the process, rural lifestyles and resource-dependent livelihoods started to morph into new forms that at least in part resembled urban living. Consequently, especially the youth increasingly aspired for urban jobs and many small-scale fishers[3] upgraded their equipment to mechanised, large-scale fishing vessels. Fishing community change is, however, a highly uneven process leaving many behind. And community identity in the village continues to build on the idea of fishing as belonging. By linking the Small-Scale Fisheries literature to uneven urbanisation processes we ask in this article how research can better understand the multiple dimensions of coastal transformations, and how these affect fishing people beyond fish catches.

In the past the lack of public transport from Meenu-Bengre to Mangaluru city, and the unstable coastal land explained why the village was left untouched by urban planners and private sector developers. Recent attempts to improve public service provision and transportation routes have resulted in improved connectivity and the introduction of urban governance in the village. As it precariously becomes part of the city a range of new possibilities, but also threats, come into view. Better education and new service jobs in the city, as well as large-scale fisheries infrastructure, are nowadays available for customary fishing people living in close proximity to an expanding city. But Meenu-Bengre residents have only a tenuous urban foothold since their locality consists of informal land common to coastal, poor households in India. Becoming part of the city additionally exposes the village to urban economic development projects which attempt to claim areas traditionally reserved for fishing activities or habitation.

For these reasons land tenure emerges as a crucial concern for urbanising fishing people (see Fabinyi, 2019). Political economic pressures increasingly make it challenging for residents to secure land, but the fluctuating size of the land adds an additional element of uncertainty. This is since the sandy peninsula where the village is located faces strong biophysical forces, primarily monsoon winds which power ocean waves, and two nearby rivers. Human attempts to stabilise the shifting sands along the coast, via for example dredging activities and breakwater construction, place our attention on how human-nature interactions shape fishing people outcomes in processes with hybrid boundaries not only between land and water, but between entities like 'nature' and 'society'. Such rapid and intertwined fishing community transformations are becoming common in the Global South,[4] yet they remain undertheorized in the Small-Scale Fisheries literature.

We understand urban fisheries as a complex entanglement of social and material processes rather than as something that is merely about seafood, marine space, and the equipment needed to secure catches. We follow the lead of Urban Political Ecology (UPE) scholars strongly influenced by post-structuralism who argue for recognizing the importance of history and geography in the reproduction of socionature in urban landscapes (see for example Swyngedouw, 2006). To understand how coastal transformations affect urban fisheries thus require an in-depth understanding of the history and networks of local politics, gender, culture, kinship, and fisheries development, as well as of biophysical forces and geographical change.

---

[3] We use the term fisher(s) to describe both men and women who work in fisheries on the boats but also in land-based processing and sales activities. Consequently, fisherman/fisherwoman refers to individual male fishers and female fishers to indicate gender.

[4] Meenu-Bengre village is making the transition from rural to urban, as evidenced through the urban-rural traits of livelihood activities and changes to urban forms of governance, much like similar fishing hamlets in Mumbai (Parasuraman, 1995) and Chennai (Arabindoo, 2009).

UPE, itself strongly influenced by Political Ecology research, is particularly useful for understanding the social outcomes of material shifts since its approach to socionature not only includes the materiality of biophysical forces, but also that of built nature in the city. In this article we argue for shifting the analytical entry point common to Small-Scale Fisheries from fish and sea-based activities to exploring urbanising fishing community transformations. When making this shift the crucial role and nature of land comes into view as part of contested and rapidly unfolding coastal transformations. It is clear from our Meenu-Bengre example that nature should include built structures like the vital road connection which has stimulated much of recent coastal transformations in the village.

In this article we use Meenu-Bengre village as a critical case study (Yin, 2013) to problematize the dominant approach to studying small-scale fishing communities. The messiness of coastal transformations in Meenu-Bengre extend our understandings of the possibilities and challenges that fishers face under conditions of socio-political and biophysical flux. In Meenu-Bengre emerging issues around unstable land, urbanization processes, economic development and governance require further theoretical enquiry and provide, we argue, possibilities to draw on (Urban) Political Ecology to sharpen the analysis of Small-Scale Fisheries research. We construct a framework which consists of three themes: (1) the assemblage of the social and the natural as co-production between nature/built nature and fishers. To help us understand how uneven power is enacted throughout the socionaturally assembled landscape we introduce (2) the contested urban landscape. This theme helps us unpack how power operates through material changes during urbanisation processes. Contestation processes cannot, however, be fully understood without understanding (3) identity politics in the heterogeneous Global South. Identity politics, through gender, caste, ethnicity and religion become part of recreating uneven power processes, in turn shaping how resources like coastal land are understood, used and governed.

The next section constructs a theoretical framework for the study of coastal transformations in Small-scale Fisheries consisting of three themes; the assemblage of the social and the natural, the contested urban landscape and identity politics. Following this we provide contextual details for the fishing village we use as case study before we, in the three subsequent sections, apply the framework to our empirical material. Finally, in the conclusion, we discuss the wider possibilities to use our (U)PE-derived framework in Small-Scale Fisheries research to unpack and investigate how coastal transformations affect fishing people.

2. **Small-Scale Fisheries and (Urban) Political Ecology**

2.1 Small-Scale Fisheries

Small-Scale Fisheries (SSF) research has focused on important challenges around resource degradation, marginalization, poverty, and conflict which directly impact small-scale fishing activities in the Global North and the Global South (Bavinck, 2005; Béné et al., 2010; Jentoft & Chuenpagdee, 2009). The literature has provided important contributions through in-depth analysis of rural livelihood strategies, marine resource use, resource governance, and the well-being of fisherfolk (Armitage, 2005; Bennett et al., 2015). In order to address challenges facing Small-Scale Fisheries around the world, SSF research has frequently drawn on common property frameworks and concepts like Common-Pool Resources, Community-Based Resource Management, co-management, and Sustainable Livelihoods Approaches (Berkes, 2009; Ostrom, 2008; Lobe & Berkes, 2004; Allison & Horemans, 2006; Béné, 2006; Béné et al. 2010). Contributions to this field have raised the importance of social justice, food security, poverty alleviation, and ecosystem services for small-scale fishers (Bavinck et al.,

2013; Béné et al., 2016; Béné et al., 2010; Coulthard et al., 2011; Daw et al., 2011; Jentoft & Chuenpagdee, 2009). This literature has, however, offered limited possibilities for explaining multidimensional coastal transformations affecting both material and social processes like those affecting people in Meenu-Bengre. One reason for this is the basic fact that Small-Scale Fisheries have mainly focused on rural settings (Allison & Ellis, 2001; Béné, 2006) and a global narrative that defines small-scale fishing communities as 'commonly located in remote areas' (FAO, 2015, p. xi).

SSF research on resource governance extensively explores local institutions, social capital, and institutionalization processes (Berkes, 2006). Common to these approaches is the emphasis on customary or local institutions as the dominant actor in resource management in the Global South (Jeffrey, 2001; Kruks-Wisner, 2011). In coastal India, customary institutions have been shown to play significant roles in local politics. Caste or religious-based local institutions have been, and continue to be, influential institutions (Bavinck, 2001; Cinner et al., 2012; Coulthard et al., 2011; Kurien, 2007). Less common in SSF research are, however, questions of power relations and representation within these institutions (Kruks-Wisner, 2011). Urbanisation processes may be particularly able to inform SSF research because of its transitional characteristics where a multi-institutional landscape requires analysis of not only customary institutions but also emerging formal institutions across governing scales (Kadfak, 2018).

In addition, Small-Scale Fisheries research frequently overlooks the importance of spatial and material transformations in continuously re-shaping the conditions for livelihoods including vital land struggles and governance relations. The main subjects of analysis in SSF are, perhaps unsurprisingly, activities at sea and concern marine resources (Bennett et al., 2015). SSF research, thus, contains only limited discussions regarding transitional activities and the various points of connection between small-, medium, and large-scale fisheries including technological and economic change, with limited analytical purchase when it comes to demographic transitions—for example, the increasing number of migrant workers/residents in fishing villages—due to a lack of examples from urban fisheries (Béné et al., 2016).

Recently the SSF literature has, however, started to include urban implications in its discussions including coastal pressures on small-scale fishing communities (Bavinck et al., 2017; Cinner et al., 2007; Fabinyi, 2010, 2019; Kadfak, 2019; Kumar et al., 2014), aquaculture (Saguin, 2014) and urban markets for fish sellers (Thara, 2016). A recent 'themed issue' in Maritime Studies on 'post structural approaches to fisheries' (Volume 16, Issue 1, December 2017) shows promising theoretical interventions in favour of tracing socio-material networks (Mather et al., 2017) in line with social theorists who urge researchers to pay more attention to how materiality and physical changes influence how societies function (Nightingale, 2014). In this article we continue this line of argument for improved post-structural sensitivity in fisheries research by drawing on Political Ecology (PE) and Urban Political Ecology (UPE) approaches.

2.2 Political Ecology of small-scale fisheries

Broadly, Political Ecology (PE) studies power and politics in relation to the environment, paying attention to the knowledge of, access to, control over and distribution of resources as well as the produced environmental and social outcomes that politicised environments give rise to across scales (Nightingale 2014; Forsyth, 2003; Bennett, 2019). The study of how political processes affect the governance of resources/environments use core concepts like power, social justice, contestation, power, identity/subjectivity, scale and history (Ahlborg &

Nightingale, 2018; Forsyth, 2008; Neumann, 2009; Truelove, 2011). Political ecologists understand the theorising of power through contextual specificity (Truelove, 2011; Nightingale, 2012).

Power and politics within fisheries governance require similar conceptualisation to other resources. Borrowing from PE, the (un)even contribution of resources in the making of marine and coastal space can be understood as a product of the constant contestation of different stakeholders. Within PE, contestation occurs when one group in society tries to make claims over resources and fight uneven distribution of power (Gonda, 2019), or in other words, claim justice. Deeply uneven power relations become apparent in contestations by for example social movements, through electoral politics, or as resistance by marginalised groups (Heynen et al., 2006; McFarlane & Rutherford, 2008; Ranganathan, 2014). Contestation helps us understand marine and coastal issues, such as the undermining of local support for marine protected areas where fishers are excluded from governance (Bennett & Dearden 2014), and local contestation against coastal grabbing which draws on community-based conservation projects and other alliances (Bavinck et al., 2017).

Contestation as a concept within PE requires further explanation of 'who' are the actors/institutions who have power to influence decision-making in fisheries. In highly heterogeneous societies in the Global South, identity politics' becomes relevant as a concept when we study power. The ways in which identity politics underpin, support or work against contestations provide us with an expanded understanding of power as relationally constructed and enacted, including the use of discursive power and claims to knowledge (Lawhon et al., 2014). Gender, ethnicity and religion are crucial identities which become entangled with other categories in uneven power processes, and in turn shape how resources are understood, used and governed. For instance, identity politics are emphasised through the politics of caste and religious belonging in the postcolonial politics of India (Cornea et al., 2016; Zimmer, 2015), while racial post-apartheid politics shape South African governance (Lawhon et al., 2014). Identity politics help us explore how, and in which ways, people/citizens interact with the state over access and control of resources. In other words, state-citizen relations, become momentous in the (particularly) blurred divisions which exist between these entities in South Asia (Gupta, 1995).

The state in the Global South is highly heterogeneous and pluralised due to the many widely varying institutional frameworks and approaches to governance which exist, but also due to the wide range of informal practices which crosscut the officially sanctioned practices. In short, in such settings regulations as well as the implementation of policies are continuously up for widely varying interpretations and forms of negotiation (Roy, 2005). While it is clear that identities generate non-uniform social groups, they also result in diverse institutions. For instance, middle-class and subaltern groups in India may come together from time to time on particular issues, but tend to do so only in highly fractured ways with any grouping immediately cross-cut by conflicting interests and modes of belonging. Sub-groups are rather interwoven along different multi-ethnic/language, gender, caste, and religious identities, to name but a few (Baviskar, 2003, 2008; Knudsen, 2012). These contradictory (and in the case of corruption also predatory) relationships and ways of being between the state and citizens require intense intermediary work to link different groups to one another, and to branches of the state (Cook, 2015; Kadfak, 2018; Olivier de Sardan, 2005). When applying our understanding of power and politics from Political Ecology on SSF research, contestation and identity politics help us unpack how different stakeholders can access and control the

distribution of (coastal) resources in ongoing social and economic transformations of urban fishing communities in the Global South.

2.3 Urban Political Ecology of small-scale fisheries

PE is often understood as studying the countryside while UPE studies the city. We recognise the UPE challenge of methodological 'cityism', that is the use of the city as the "near-exclusive analytical lens for studying contemporary processes of urban social transformation" (Angelo & Wachsmuth, 2014). By seeing Meenu-Bengre village as in the process of becoming urban we are able to 1) discuss how the urban is not a geographical container/unit of analysis, and 2) recognise the tension that exists between urban studies and resource-based livelihoods. Based on our initial entry points in SSF research, where the urban is relatively absent, and the politicised analysis of nature in PE, we argue for a more critical approach, a political ecology of urbanisation, which includes urbanisation processes in contestation and identity politics (Angelo & Wachsmuth, 2014).

If we are to understand the co-production of space by humans and non-humans (Zimmer, 2010) we need to include socionatural thinking of UPE in the analysis of urbanising fishing communities in the Global South. Erik Swyngedouw has in his extensive writings on socionature attempted to reconcile the society/nature and material/discursive binaries often seen at work in political ecology (Angelo & Wachsmuth, 2014). Continuing the discussion of political processes and their produced environmental and social outcomes, UPE scholars explore urbanisation taking into account interactions between materials and humans. In this view, the ability to claim, control, or access material flows is produced and reproduced through social actors who defend and create environments crosscut by gender, class, and ethnicity, and shaped by power struggles (Swyngedouw & Heynen, 2003). The struggles take place in socially embedded and historically specific settings (Zimmer, 2010).

Socionature within UPE highlights the importance of materiality in the urban landscape as commodity production, exchange, and consumption, but also to encompass wider dynamics whereby materials can be mobilized, attached, collectivized, and networked (Swyngedouw, 2006). Materiality in this view concerns the 'existence of those entities we term "natural", and the active roles those entities play in making history and geography' (Castree, 1995, p. 13). When biophysical processes merge with built nature the consequence is a setting that continuously transforms with multiple layers and scales (Swyngedouw, 2006), viewing materials as a lens through which to uncover wider political questions and power relations. Swyngedouw (2009, p. 58) argues that 'water research has for too long concentrated on either the physical side or the managerial side of the water problematic'. Therefore, water for Swyngedouw, or coastal transformations in our case, are not studied for their own sake but as analytical entry points which can help us understand how power operates or is contested through materials, e.g. water infrastructure, in the urban landscape (Lawhon et al., 2014).

To operationalise socionature, some UPE scholars use the concept of assemblages to trace networks and make the relationships between humans and non-humans visible during urban transformations (McFarlane, 2011). Assemblages help us to understand how different networks intersect and influence each other. They highlight the importance of how material and human interactions emerge during always ongoing transformational processes (McFarlane 2011, Swyngedouw 2006). It is a way to reconstitute social and natural relations by blurring dominant binaries like social/material, near/far, and land/water. In other words, assemblages treat both the human and the non-human as an 'emergent property of network associations rather than property inherent in discrete entities' (Bakker & Bridge 2006, p. 19). This idea

helps us to further understand the urban environment as a process of making, of continuous transformation, and of becoming, rather than as something final or static (Swyngedouw, 1999). The Meenu-Bengre fishing village is, in this perspective, always emerging and transforming.

Through assemblages, we can observe how access to materials and networks are unevenly distributed. Different forms of contestation follow as people risk becoming (further) marginalized in the fragmented city. Power during contestations is diffused across different individuals and organisations, and observable in everyday practices in the production of urban socionature (Cornea et al., 2017; Cornea et al., 2016; Zimmer et al., 2017). UPE pays special attention to instability in conflicts and contestations. Therefore, individual or group power depends on the contested character, and the practices of, institutions (Zimmer, 2010), as well as those of the state and of non-governmental organisations within urban environments (Swyngedouw, 2009). This shows that in addition to PE, UPE's view on power rests on relations continuously (re)produced through the ability to control and gain access to material flows, discursive meanings, and ideologies in the making of the city (Swyngedouw et al., 2002). We can only understand the contested landscape and identity politics as part of coastal transformation assemblages.

3. Meenu-Bengre fishing village: Urbanising yet rural, modern but also customary

Before turning to the analysis of coastal transformations, we here provide a brief account of Meenu-Bengre's experiences of urbanisation in recent decades. The village is situated on a sandy peninsula on the outskirts of Mangaluru, an expanding 'middle city' in relatively well-off southern India. Initial village settlement occurred little over a century ago when residents had to relocate from the mainland when the main fishing of Mangaluru harbour was built. At the time the peninsula was uninhabited due to its unstable land and exposed setting which faced regular storms and floods (Kadfak & Oskarsson, 2017). As Mangaluru city expanded in recent decades, in line with the overall strong economic growth of urban centres in India, the coast came into view of the city. Meenu-Bengre village with its officially 6,000 inhabitants was formally made a part of the city in 1995 as the Mangaluru City Corporation expanded into areas previously considered rural.

While Meenu-Bengre remained formally and practically disconnected from the city until relatively recently, its close proximity to the busiest harbour of the state of Karnataka ensured that it was able to be part of the first Blue Revolution[5]. Local fishing people adopted motorised fishing vessels as well as advanced fishing gear in response to technological shifts and an increasing demand for seafood (Subramanian, 2009). The local fishing industry has one of the highest fish-landings in India (CMFRI, 2015) creating demand for the Mangaluru fishing harbour to expand on multiple occasions. The most recent expansion from 2015 occupies half of the Meenu-Bengre village waterfront where many small-scale fishing activities used to take place including net mending, fish drying and boat landing. Meanwhile many of the fisherfolk in the village have, however, already upgraded their fishing vessels to large-scale, mechanised trawlers.

Since the village became part of Mangaluru it has a democratically elected municipal representative, the Corporator, who represents people on municipal matters and provides links

---

[5] Subramanian (2009) refers to the Indian Blue Revolution in two periods; The first of fisheries development in the mid-1950s, when the Indian government promoted mechanization, the second thirty years later, the second to promote aquaculture.

to regional and state-level decision-making forums. Meanwhile the two dominant fishing castes, Mogaveera and Kharvi, continue to dominate the parallel, caste-based customary institution, here referred to as Meenu-Bengre Mahajana Sabha (MBMS) or Meenu-Bengre Great Peoples' Assembly. This is the main customary governing body in the village with well-established links to similar, influential caste-based associations of fisherfolk along the coast, and separate local associations for Muslim and Christian residents. These networks of kinship have since long cultivated political influence also in supposedly egalitarian democratic politics making the overlapping and identity-based nature of governance best seen as thoroughly ingrained rather than as a temporary phenomenon part of the more recent urban transition. According to our household survey Meenu-Bengre village has a Hindu majority (90%) with Muslim (6%) and Christian (4%) minorities. About two thirds of the population works in fisheries-related livelihoods, while another third works outside of the sector.

The policy goal to establish closer links to the sea via increased trade has long-running antecedents as decision-makers in the city have for decades attempted to create a better position for Mangaluru in relation to other cities across India (Cook, 2018). The construction of an all-weather New Mangalore Port in 1975, just north of the city, has enabled Mangaluru to attract large-scale industrial projects such as the Mangaluru Special Economic Zone, several petroleum refineries, and the public sector industry Mangalore Chemicals and Fertilisers. Mangaluru is also a city with a growing middle-class and educated professionals. It has expanding infrastructure connections domestically and internationally (Kudva, 2014) which together with excellent educational facilities contribute to significant labour migration to the Gulf and beyond (Osella & Osella, 2009; Cook, 2015). Along with increasing job opportunities come a new urban imaginary with realigned hopes and dreams (Cook, 2018). Aspirations for an urban future appear to motivate many city dwellers rather than livelihoods based on natural resource use like fisheries.

Over in total eight months of fieldwork, between 2013 and 2015, we carried out participant observation, semi-structured interviews, and two surveys, as well as secondary and archival data collection. In line with Political Ecology's methodological outlook, we studied everyday practices to capture power relations 'in action' (Berenschot, 2010; Peluso, 2009) and bring these into the core of our analysis. Based on this we are able to recognize a wide range of previously unseen actors who are part of making the city. Examples include understanding cultural heterogeneity with its complex divisions of subgroups (e.g. caste, religious), formal-informal institutions/settlements, and multilingual and multi-ethnic residents. It is only by observing the everyday activities of local residents, political actors, and institutions that we can extend our insights into how livelihood strategies are formed and realigned in the light of urbanisation. Learning from everyday practices help us unveil unseen actors and shifting livelihood practices in urban fisheries. This also helps us comprehend the importance of local institutions and intermediaries in connecting, interpreting and negotiating on behalf of Meenu-Bengre residents in urbanizing Mangaluru.

Participant observation is a primary data collection method in this research. We have engaged with Meenu-Bengre residents via observations combined with informal discussions during fishery-related activities. We have also joined informal conversations in public and private spaces in the village. In these conversations we came to learn about the intertwined nature of topics ranging from local politics to new fisheries regulations, to conflicts over catch and fish prices, land negotiations and the new harbour construction. Furthermore, we conducted fifty-one semi-structured interviews with local politicians, key leaders in Meenu-Bengre and neighbouring communities, NGO representatives, government administrators, researchers,

and people knowledgeable in fields such as fisheries, tourism and local governance. A household survey was conducted among 155 households of in total 982 houses in Meenu-Bengre. A separate waterfront survey was designed to capture beach activities including livelihoods, amount of time spent at the waterfront, and perceptions about the new fishing harbour. The complex fieldwork material is unpacked in the below and interpreted using a (U)PE lens to view how Meenu-Bengre residents experience ongoing coastal transformations.

4. Assembling coastal space: Emerging biophysical and built nature

We see the materiality of coastal transformations in Meenu-Bengre village from the shore rather than focused on sea and fish catches. The assemblage of coastal space is composed of entangled land, water (sea/river), harbours, boats, industrial compounds, markets, concrete jetties, and a wide range of human actors (including local residents, urban planners, investors and administrators), as well as social relations, and extended governance networks. By viewing coastal transformations from the shore we highlight the fluid land and its shifting boundaries to water where 'nature' becomes a pivotal part as humans interpret, negotiate and contest resources. Outcomes of the transforming waterfront, therefore, depend on the multiplicity of relationships within these networks.

Sandy peninsulas like the one where Meenu-Bengre village is located appear on the West coast of India where ocean waves crash into shallow waters. The two main biophysical forces affecting wave patterns, and therefore also sand formations, in Mangaluru are monsoon winds with attendant ocean currents, and the two large rivers which drain into the Indian Ocean as the city meets the coast (Kumar et al, 2010). Historical records indicate a constantly shifting river mouth (Kadfak & Oskarsson, 2017), while modern attempts strive to stabilise the boundaries of what Lahiri-Dutt (2014) terms historical 'land-water binaries'. Such stabilisation efforts have played out at best unevenly. The central harbour areas of Mangaluru receive the necessary political and economic support to be reinforced with stone jetty construction, breakwater infrastructure and dredging boats, while outlying areas even just a few kilometres from the city centre, face much uncertainty. In some cases severe erosion has eradicated entire villages (Kadfak & Oskarsson, 2017). Coastal transformations are in this manner processes that are simultaneously social and material and therefore constitute a particular socionature.

Throughout history, the land mass of Bengre peninsula has consequently shifted strongly to both grow and reduce in size. Morphology studies show a reduced length by 1,730 metres from 1910 to 2005 (Kumar et al., 2010). Since 1997 the process has, however, reversed leading to a gain of approximately forty-two acres in the southern part of the peninsula. Some parts of the shoreline have extended seaward by between ten and forty-five metres in just a few decades (Kumar & Jayappa, 2009). The main biophysical function shaping sand erosion and accretion is the flow of water along the coast powered by monsoon winds, and from the two rivers. Built nature affects the process, however, since any jetty or similar infrastructure built in the ocean or in one of the rivers will, simply put, accumulate sand on the upstream side, while the downstream side faces erosion. When new land formed by accreting sand emerges in the interplay between water currents and built infrastructure, it is seen by the government with support from existing legislation, as belonging to the state and thus available for economic development projects like the proposed golf course or new fishing harbour. Land erosion on the downstream side, on the other hand, is understood as a natural disaster for which the state takes no responsibility and consequently offers no compensation to the land losers (Kadfak & Oskarsson, 2017). In this manner the local state can 'make' new land

available for its preferred commercial development projects, while it takes no responsibility for the poorer outlying areas which face erosion.

Meenu-Bengre's unstable land-water boundary and lacking infrastructural links for a long time reduced the city administration's interest in the village. Recently various development activities have, however, commenced in the area including a new fishing harbour, a coastal protection project sponsored by the Asian Development Bank, and a proposed golf course. As the urban expansion reaches the sandy peninsula inhabited by fishing people, the result is changes to land governance and rearranged economic dynamics, but also material changes to the coastline. Fishing people need to be able to realign their livelihood strategies to account for new opportunities, but also to threats of eviction from their informal land holdings and land uses. Urbanization and fluid boundaries demand that local residents are vigilant to maintain their habitations to ensure access to new and old livelihoods.

Assemblage thinking helps us see the influence of heterogeneous humans and materials during coastal transformations in Meenu-Bengre. Material changes which affect fishing livelihoods include moving from wooden canoes to steel fishing vessels, paving the sandy beach with concrete to create a harbour, reallocating open beach spaces used for huts and net mending into a cement compound for equipment repairs, and dredging the river to allow for larger vessels beyond 4 m depth. All these changes influence the ways in which Meenu-Bengre fishermen and fisherwomen carry out their livelihoods, or adapt to new emerging ones. The second citation in the introduction reflects on how the physical quality of the new fishing harbour changes dynamics between small- and large-scale fisheries as the small-scale fishermen loose mooring and social spaces previously available on the waterfront. According to our waterfront survey and informal interviews, however, many small-scale fishers have already partly joined large-scale fisheries, either by becoming co-owners in bigger boats or by doing seasonal work on commercial vessels.

Another aspect of the reduced travel time to Mangaluru city is the attendant influx of migrant workers and other urban dwellers who have chosen to settle in Meenu-Bengre. According to our household survey approximately 14% of residents are migrants in this previously relatively close-knit village. Local residents find this transformation both beneficial and unsettling. Many young families complain about the difficulties to find space for house construction and end up building on the uncertain ocean front where land is unstable and unregistered as well as in focus for commercial development. On the contrary, renting out property to migrants is a new source of income for many long-term Meenu-Bengre residents. With increasing activities and development projects, the future of Meenu-Bengre residents will depend to a great extent on the forms of material transformations that comes with urbanisation.

The socionatural assemblage lens allows us to consider how biophysical forces co-constitute the ways in which local residents and the state govern, manage, access, and control resources in an urban fisheries context. The shifting materials at the waterfront is connecting national and global demand for seafood with customary fishing people; hence there are more and more mechanised boats in the fishing harbour, and local livelihood strategies need to be able to adapt to the changes. As is well known in the SSF literature, mechanisation risks excluding many who do not have the required capital and skills to become part of the large-scale fishing industry. The shifting sands on which the village is built indicate that residents might struggle to keep a foothold in the city. To date the village has been close enough to central Mangaluru to benefit from coastal protection infrastructure put in place to reinforce present boundaries,

and additionally benefited from accreting sand on its ocean front. If the beach continues to grow much needed space for resident housing might become available, but the new land might also be acquired for commercial projects. On the other hand there is a risk that realigned coastal infrastructure generates erosion to reduce village spaces. The peri-urban assemblage upon which Meenu-Bengre village rests is a highly unpredictable set of relations where human and biophysical forces may incur vital changes to increase or decrease living spaces in the future.

5. Contested urban landscape: Uneven power relations rework the socionaturally assembled landscape

In the past the state in Meenu-Bengre was largely absent due to lacking infrastructural and administrative links, the precarity of the location, and the low economic land value. This ensured continued customary governance in an area largely left on its own. In recent years, however, economic development in the expanding city influenced the municipality to include the sand-spit within its municipal limits and reimagine the possible uses of beaches on the urban fringe. The Bengre peninsula has become more visible in the eyes of the state and, consequently, the state has become more enthusiastic about governing the area. Attempts to stabilize the land with river dredging and seawall construction, and 'development' projects are material signifiers of the state on the peninsula. The shift of material flows, in this case towards more stable land and urban 'modern' infrastructure, require the customary village institution to realign its roles, to instead become an intermediary connecting local residents to the state.

One major proposed 'development' project affecting land relations along Meenu-Bengre beaches is the international golf course. It was initially proposed in 2007 but did not make progress until 2015 when the company received administrative approvals from the central government and started fencing the project area. This generated increased uncertainty for informal land users who lacked legal documents for their temporary or permanent houses on the physically growing peninsula. Struggles for land rights were far from new however since local residents had for years attempted to make various claims to secure house tenure. For instance, they had applied for door numbers, or requested electricity connections, as ways to seek improved formalisation. In separate developments on the peninsula, government authorities, especially the Port Authority and the Department of Fisheries, stabilised what used to be a fluid waterfront landscape affected by seasonal floods during the monsoon, and built a harbour along a part of the beach. These changes reduce the informally available common spaces for small-scale fishermen and fisherwomen. Small-scale fishermen no longer have space for their boats on the beach and many fisherwomen have stopped fish drying activities (Kadfak & Knutsson, 2017).

The contested urban landscape of Meenu-Bengre can thus be seen through multiple struggles for improved land tenure and land use. We note that informality is key to how both the state and residents approach urban land governance in Meenu-Bengre. Authorities in different parts of the Mangaluru city administration allow the land status to remain unclear. This is partly because these authorities are unable to keep up with the swift biophysical changes. Poor procedures like infrequent surveys add to inaccurate master plans like maps that do not include, for example, all of the houses on the peninsula. The informality in land relations is, however, understood as more than merely a lack of capacity among state actors to map and plan for biophysical changes. It is also as an intentional effort to ensure that the land's status remains ambiguous (see also Knudsen, 2012). This is because informality opens up opportunities for the state and its development partners to claim new land which emerges on

the sand-spit for future commercial development, or for state-funded development projects rather than for urban fishing households. Informal land also absolves responsibility for the state to for example step in and provide support or even compensation when residents are negatively affected by erosion caused by new urban infrastructure (Kadfak & Oskarsson, 2017).

When residents make smaller claims, such as for temporary land tenure or door numbers for a registered house, applying for piped water, paved public roads, or new street lights they open up 'spaces of possibility' (Ranganathan, 2014). Any supporting document may, if successful, represent one small step towards the final goal of secured land tenure for residential plots. To move also smaller claims forward, residents connect with local intermediaries to navigate political channels, find support within the administration at city and state level, and negotiate with a wide range of different authorities. So far, the Corporator and the Meenu-Bengre Mahajana Sabha have been the main intermediaries in claims-making over informal land. As intermediaries they selectively respond to the requirements of local residents in everyday politics. For instance, the MBMS has gathered information on land ownership and use from all villagers giving it the power to speak to, and make requests from, the government. The Corporator, who in a sense becomes a competitor in political networks attempting to provide benefits to residents, can draw on formal, democratic politics for her (the elected representative was female at the time of fieldwork) influence. She will, however, need to cultivate strong political links through party networks to gain meaningful influence. Such cultivated links may prove helpful in shifting the overall political agenda on land at city and higher levels in favour of villagers.

At the time of writing local residents cannot claim victory, but the stability marked by permanent house construction material, improved electricity supply, and a new, permanent road signify important stepping stones toward secured tenure, as does the extensive mobilisation of networks and political groups within the city and the wider region. The focus on power relations help us understand how residents engage with institutions and individuals including city bureaucrats (e.g. fisheries officers and officers at the District and Municipality offices in Mangaluru), political power brokers, caste associations, private companies, NGOs, small- and large-scale fishing-boat owners, national regulations and broader processes of fisheries policy. Always ongoing realignments show power dynamics at play between customary and formal institutions, and the ways in which these institutions relate to residents, one another, and to wider state agencies in the everyday. This contestation and broader local governance processes are partly supported and mediated by a range of intermediaries who create and cultivate links (Cook, 2015; Kadfak, 2018) between local residents and the state. The outcomes are highly contingent but indicate governance processes fluctuating almost like the shifting sands of the peninsula where few things can be taken for granted. More importantly, a long-term positive trajectory can be seen where increasing competition among local institutions appears to mean that a larger number of residents will be able to receive benefits.

The contested urban landscape thus helps explain how always ongoing contestations over coastal land during urbanisation processes in Meenu-Bengre play out. It shows how residents are able to contest encroachments by economic development projects with the help of different actors who associate at different scales of power relations. Swyngedouw (2006, p. 106) argues that 'the commodity relation and the flow of money veils and hides multiple socio-ecological processes of domination/subordination and exploitation/repression that feed the urbanisation process'. Therefore, unequal power relations should be seen as situated

within socio-material transformations, and as products of urban processes (McFarlane, 2011; Swyngedouw & Heynen, 2003). The material changes give rise to new forms of socio-political relations, providing certain groups and actors better access to, and control over, material flows in coastal areas, while disadvantaging others (McFarlane, 2011; Swyngedouw, 2006). Consequently, urban (and non-urban) fishers need to react to material changes. The extent to which different groups can benefit from opportunities afforded by coastal transformations depend on their ability to take part in negotiations or form political alliances often relying on identity politics. Our study was restricted to Mangaluru city but it is clear that intermediaries in the city connect with party representatives and other brokers via for example caste and party networks at state level and beyond. Tracing these links will allow us to reach a fuller understanding of how far-reaching, uneven power relations influence coastal transformations.

6. Identity politics: Capturing the pluralism of the Global South

Meenu-Bengre shares its postcolonial background with other fishing communities in coastal India where caste remains influential in determining decision-making power in both formal and informal institutions (Bavinck, 2001; Kruks-Wisner, 2011; Thara, 2016). Mogaveera is the dominant fishing caste in Meenu-Bengre and male Mogaveera fishers make up a majority of the MBMS members. The Mogaveera in Meenu-Bengre are further connected to kinship networks in caste associations along the coast of Karnataka state. The Mogaveera alliances exist not only in relation to religious- and fisheries-based activities, but also as wider social and political networks. One effective mobilisation of the Mogaveera network occurred in the late 1990s when a Barge Mounted Power Plant was proposed in the village. The MBMS president was able to mobilise a large group of Mogaveera network members in street protests which ensured that the project was abandoned. The customary caste council MBMS thus continues to wield widespread influence in the village, and beyond, via its knowledge of both social relations and land holdings.

We view the diffused power of institutions like the MBMS as relationally enacted through identity, intermediaries' practices and changing urban environments. UPE here offers improved analytical purchase, we argue, compared to PE due to its ability to see power not only influencing material outcomes but also the reverse, how materiality affects power relations. Power is observable through everyday practices during urbanisation in Meenu-Bengre. As the new fishing harbour at Meenu-Bengre was completed in 2015 it was clear that small-scale fishermen of the village would not get space to moor their boats. A lack of protest against the harbour, however, reminds us of the need to look more closely at individual ownership and livelihood strategies within the group of small-scale fishermen. At the time many were about to shift to, or at least become partly involved in, mechanised fisheries and would therefore benefit from the new fishing harbour. By studying the everyday politics within this relatively close-knit and well-organised group of people, strategies and approaches to the new harbour became clear, including how it provided benefits to some of the most influential fishermen in the MBMS. Different groups of fishermen draw on support from caste associations, personal networks, or political parties at local and state-level, in attempts to facilitate outcomes to their personal benefit, but also with an eye toward group belonging. The end result was highly variegated.

Most of the people we met self-identified as having Mogaveera or Kharvi caste background, including many who no longer catch fish on a regular basis. Urbanisation has increased job opportunities outside fisheries, attracting especially the younger generation to search for jobs in Mangaluru city or abroad including in the Middle East (Cook, 2015). Public transport to the

city, an increase in educational institutions, and improved access to markets provide further work opportunities also for many women in the village. Fishing out at sea remains a male occupation, and women, especially in the older generation, used to work in land-based fish processing and sales activities. Many younger women from the village nowadays continue their education beyond high school and seek to enter service sector or IT jobs in the city. Interestingly, however, the findings also show that Small-Scale Fisheries remain a backup option for educated young men who wait for often elusive permanent jobs in the city (Kadfak, 2019). Resource-dependant livelihoods remain important especially among the urban poor, who face highly uncertain prospects (see also the example of urban aquaculture in a small Bengali city by Cornea et al. 2016). Changing power relations among members of fishing castes and those outside during urbanisation rearticulates how identity politics of Mogaveera and Kharvi people will play out in the future.

Our investigations into state-citizen relations made it clear that formal and informal village institutions competed with one another to best represent residents. In highly uncertain interactions different groups of local residents aligned with particular intermediaries through gender, caste or religious affiliations. One major dividing line was how Hindu residents tended to request MBMS support while Muslim residents contacted the Corporator. Both the Corporator and MBMS in turn attempted to provide further links to a range of institutions who might be able to address concerns, or at least open up for improved outcomes. Often concerns played out in seemingly unexpected ways. For example, registering your door number might not at all be about ensuring the delivery of mail, or wanting to appear on street maps. It could rather be an attempt to gain access to electricity, or a stepping stone towards the formal land tenure which eluded all residents in the village, but was particularly important for those closer to the shores of the peninsula since national coastal regulations prevent built structures.

Significant 'link work' (Cook, 2015) took place in complicated chains of referral in attempts to ensure villagers had a continued foothold in the city in the face of multiple cross-cutting institutions, as well as interests, and intensely opaque regulations. Seeing urban societies in the Global South, like Meenu-Bengre, as highly fragmented and politicized units of analysis, help us re-navigate how class, race, and gender reproduce urban environments by acknowledging the importance of identity and complex, often cross-cutting, social relations (Zimmer, 2015). These examples allow us to appreciate the importance of the specific context of an urban fishing village in southern India. Context-specific research which includes identity politics thus provides a way to capture the pluralism of the Global South and to realign the usually unchanging role of fisheries and fishing people in SSF research.

7. Discussion and Conclusion

In this article we argue that an (Urban) Political Ecology approach allows us to better comprehend how urban fishing communities navigate complex coastal transformations (see also Bennett, 2019). Our review of the literature created a framework which attended to emerging material transformations in assemblage theory, uneven power relations of the contested urban landscape, and the ways in which identity politics of the Global South shape individual and collective struggles to secure livelihoods and a place in the city. We do not foresee our framework as universally applicable across fishing communities. We rather anticipate its importance in showing how social and natural entanglements emerge and change during always ongoing, contested transformations within context specific fishing communities in the Global South. We conclude in four points how the framework can contribute to SSF research.

Our first point is that the assemblage theme makes it clear that urban fisheries do not only depend on the ability to access and control marine resources, but also on the possibilities to make claims over (unstable) coastal land, and on wider political and economic changes. As new socio-economic opportunities, as well as challenges, come into view based on our shift in analytical entry point from marine resources to coastal transformations, we are able to show how (built and 'natural') nature is constantly challenging established politics and livelihood strategies among different groups of fishers. By paying attention to materials that assemble in the (urban) landscape we can start to answer why and with what consequences fishers, among other options, decide to upgrade to larger, mechanised equipment, flexibly engage in informal livelihoods at the main fishing harbour, leave fisheries to take up service sector jobs, or make smaller land claims along the village waterfront.

The second point from the assemblage theme of our (Urban) Political Ecology framework helps us comprehend processes of producing and reproducing society. The livelihood strategies of We note that the livelihoods of Meenu-Bengre fishers do not fall into the neat SSF categories outlined by Smith et al. (2005), but constantly react, adapt, and adjust to change. Meenu-Bengre livelihood strategies, thus, fluctuate according to urban job opportunities, available infrastructure, economic policies, possible business deals, fishing technologies, the changing coastline and many other factors that are part of the unstable urban landscape. In line with Li's (2014) study of highlanders in Indonesia, we argue that understandings between a full embrace of modernity and a return to tradition offer a more appropriate perspective on how we can understand change among groups of people usually identified as traditional. In this sense Meenu-Bengre becomes representative of similar phenomena in coastal areas of the Global South (see for example Arabindoo, 2009) where livelihood strategies shift dramatically according to socio-material changes during always ongoing transformations.

Our third point relates to the contested urban landscape where uneven power struggles play out. Small-scale Meenu-Bengre fishers (and other residents) work towards increased security in a fluctuating and fractured urban landscape in ways that make sense according to their situated specificities. Without seeking an end goal or stable solution this theme allows us to see fishers as active agents able to contest, negotiate and respond to livelihood changes and urban land pressures in myriad ways. Meenu-Bengre residents engage with different networks in large-scale fisheries and across urban governance institutions, but also by continuing to make small (and sometimes larger) claims through active brokerage performances influenced by the particular biophysical forces which act on their sand-spit. This defuses the view that inequality holds in an absolute manner during coastal transformations; to win or lose out during transformations depend to a large extent on the ability to access and control resources across different networks.

In the fourth and final point we explore how identity politics allow us to unpack the local, customary institutions which are often held up in SSF research as the solution to resource governance challenges. We note how the customary institution in Meenu-Bengre referred to as the MBMS reproduces its influence primarily via caste in a habitation with mixed religious belonging. It is clear that the customary institution does not represent everyone (see also for example Kruks-Wisner, 2011). At the same time we note that the MBMS is itself transforming its approach toward interventions aimed at influencing formal democratic party politics. Our point here is to show that while customary institutions draw on deep-rooted social relations they are also open to change as part of wider networks of institutions in the

city. By reconceptualising customary institutions in SSF research as one of many political actors and intermediaries that act within, but also beyond, customs and norms new institutions and modes of working come into view (see also Subramanian, 2009).

To conclude, we argue that using our (Urban) Political Ecology framework gives improved analytical purchase for the study of Small-Scale Fishing communities in the Global South. What we understand as always ongoing coastal transformation processes push our theoretical conceptualisation to rethink the usual point of departure within SSF literature. We propose that there is a need to shift research focus in SSF from marine resources to the coast for a better understanding of life and livelihoods of fishers, (see also the recent work of Fabinyi, 2019). The shift opens up for social-material transformations of the coastline itself and includes modern economic activities including urban processes. The shift in focus also turns our attention away from the dichotomy between the modern and the traditional, to view how small-scale fishers use their agency to adjust to, as well as contest, changes. In contrast with our framework, Small-Scale Fisheries research typically focuses on fewer dimensions, and often view these separately. It focuses on marine resources rather than on mixed livelihoods and the research is usually set in a passive environment which merely provides resources for human use and management (e.g. Barbier et al., 2011; Allison & Horemans, 2006).

8. References

Ahlborg, H, & Nightingale, A. (2018). Theorizing Power in Political Ecology: The Where of Power in Resource Governance Projects. *Journal of Political Ecology, 25*, 381–401.

Allison, E. H., & Ellis, F. (2001). The Livelihoods Approach and Management of Small-Scale Fisheries. *Marine Policy, 25*(5), 377–388.

Allison, E. H., & Horemans, B. (2006). Putting the Principles of the Sustainable Livelihoods Approach into Fisheries Development Policy and Practice. *Marine Policy, 30*(6), 757–766.

Angelo, H., & Wachsmuth, D. (2015). Urbanizing Urban Political Ecology: A Critique of Methodological Cityism. *International Journal of Urban and Regional Research*, *39*(1), 16–27.

Arabindoo, P. (2009). Falling Apart at the Margins? Neighbourhood Transformations in Peri-Urban Chennai. *Development and Change, 40*(5), 879–901.

Armitage, D. (2005). Adaptive Capacity and Community-Based Natural Resource Management. *Environmental management, 35*(6), 703–715.

Barbier, E. B., Hacker, S. D., Kennedy, C. J., Koch, E. W., Stier, A. C., & Sillman, B. R. (2011). The Value of Estuarine and Coastal Ecosystem Services. *Ecological Society of America, 81*(2), 169–193.

Bavinck, M. (2001). Caste Panchayats and the Regulation of Fisheries along Tamil Nadu's Coromandel Coast. *Economic and Political Weekly*, *36*(13), 1088–1094.

Bavinck, M. (2005). Understanding Fisheries Conflicts in the South — A Legal Pluralist Perspective. *Society and Natural Resources, 18*(9), 805–820.

Bavinck, M., Berkes, F., Charles, A., Dias, A. C. E., Doubleday, N., Nayak, P., & Sowman, M. (2017). The Impact of Coastal Grabbing on Community Conservation – A Global Reconnaissance. *Maritime Studies, 16*(1), 1–17.

Bavinck, M., Chuenpagdee, R., Jentoft, S., & Kooiman, J. (Eds.). (2013). *Governability of Fisheries and Aquaculture: Theory and Applications* (Vol. 7). Amsterdam: Springer.

Baviskar, A. (2003). Between Violence and Desire: Space, Power, and Identity in the Making of Metropolitan Delhi. *International Social Science Journal, 55*(175), 89–98.

Baviskar, A. (2008). Introduction. In A. Baviskar (Ed.), *Contested grounds: Essays on Nature, Culture, and Power* (pp. 1–12). New Delhi: Oxford University Press.

Béné, C. (2006). *Small-Scale Fisheries: Assessing their Contribution to Rural Livelihoods in Developing Countries*. FAO Fisheries Circular. No. 1008. Rome: Food and Agriculture Organization of the United Nations.

Béné, C., Arthur, R., Norbury, H., Allison, E. H., Beveridge, M., Bush, S., Campling, L., Leschend, W., Little, D., Squires, D., Shakuntala H., T, Troell, M., & Williams, M. (2016). Contribution of Fisheries and Aquaculture to Food Security and Poverty Reduction: Assessing the Current Evidence. *World Development, 79*, 177–196.

Béné, C., Hersoug, B., & Allison, E. H. (2010). Not by Rent Alone: Analysing the Pro-Poor Functions of Small- Scale Fisheries in Developing Countries. *Development Policy Review*, *28*(3), 325–358.

Bakker, K., & Bridge, G. (2006). Material Worlds? Resource Geographies and the Matter of Nature'. *Progress in Human Geography*, *30*(1), 5–27.

Bennett, N. J. (2019). In Political Seas: Engaging with Political Ecology in the Ocean and Coastal Environment. *Coastal Management*, *47*(1), 67–87.

Bennett, N. J., Govan, H., & Satterfield, T. (2015). Ocean Grabbing. *Marine Policy, 57*, 61–68.

Bennett, N. J., & Dearden, P. (2014). Why Local People do not Support Conservation: Community Perceptions of Marine Protected Area Livelihood Impacts, Governance and Management in Thailand. *Marine policy*, *44*, 107–116.

Berenschot, W. (2010). Everyday Mediation: The Politics of Public Service Delivery in Gujarat,
India, *Development and Change, 41*(5), 883–905.

Berkes, F. (2006). From Community-Based Resource Management to Complex Systems: The Scale Issue and Marine Commons. *Ecology and Society*, *11*(1).

Berkes, F. (2009). Evolution of Co-Management: Role of Knowledge Generation, Bridging Organizations and Social Learning. *Journal of environmental management, 90*(5), 1692–1702.

Castree, N. (1995). The Nature of Produced Nature: Materiality and Knowledge Construction in Marxism. *Antipode, 27*(1), 12–48.

CMFRI, (2015). *Annual Report 2014–15*. Cochin, India: Central Marine Fisheries Research Institute.

Cinner, J. E., Sutton, S. G., & Bond, T. G. (2007). Socioeconomic Thresholds that affect use of Customary Fisheries Management Tools. *Conservation Biology, 21*(6), 1603–1611.

Cinner, J. E., Basurto, X., Fidelman, P., Kuange, J., Lahari, R., & Mukminin, A. (2012). Institutional Designs of Customary Fisheries Management Arrangements in Indonesia, Papua New Guinea, and Mexico. *Marine Policy*, *36*(1), 278–285.

Cook, I. M. (2015). Link Work Land and Housing Brokers in Mangaluru, India. *Journal of South Asian Development, 10*(3), 292–317.

Cook, I. M. (2018). Sizing the City: Lack, Intimacy and Niche Positioning in Mangaluru, India. *City, 22*(5–6), 703–720.

Cornea, N., Zimmer, A., & Véron, R. (2016). Ponds, Power and Institutions: the Everyday Governance of Accessing Urban Water Bodies in a small Bengali city. *International Journal of Urban and Regional Research, 40*(2), 395–409.

Cornea, N., Véron, R., & Zimmer, A. (2017). Clean City Politics: An Urban Political Ecology of Solid Waste in West Bengal, India. *Environment and planning A, 49*(4), 728–744.

Coulthard, S., Johnson, D., & McGregor, J. A. (2011). Poverty, Sustainability and Human Wellbeing: A Social Wellbeing Approach to the Global Fisheries Crisis. *Global Environmental Change, 21*(2), 453–463.

Daw, T., Brown, K., Rosendo, S., & Pomeroy, R. (2011). Applying the Ecosystem Services Concept to Poverty Alleviation: the Need to Disaggregate Human Well-Being. *Environmental Conservation, 38*(04), 370–379.

Fabinyi, M. (2010). The Intensification of Fishing and the Rise of Tourism: Competing Coastal Livelihoods in the Calamianes Islands, Philippines. *Human Ecology, 38*(3), 415–427.

Fabinyi, M. (2019). The Role of Land Tenure in Livelihood Transitions from Fishing to Tourism. *Maritime Studies*, (online access 11 September 2019).

FAO, (2015). *Voluntary Guidelines for Securing Sustainable Small-Scale Fisheries in the Context of Food Security and Poverty Eradication*. Rome: Food and Agriculture Organization of the United Nations.

Forsyth, T. (2008). Political Ecology and the Epistemology of Social Justice. *Geoforum, 39*(2), 756–764.

Forsyth, T. (2003). *Critical political ecology: the Politics of Environmental Science*. London: Routledge.

Gonda, N. (2019). Land Grabbing and the Making of an Authoritarian Populist Regime in Hungary. *The Journal of Peasant Studies*, *46*(3), 606–625.

Gupta, A. (1995). Blurred Boundaries: the Discourse of Corruption, the Culture of Politics, and the Imagined State. *American Ethnologist, 22*(2), 375–402.

Heynen, N. C., Kaika, M., & Swyngedouw, E. (2006). Urban Political Ecology: Politicizing the Production of Urban Natures. In N. C. Heynen, M. Kaika & E. Swyngedouw (Eds.), *In the Nature of Cities: Urban Political Ecology and the Politics of Urban Metabolism* (Vol. 3, pp. 1–19). London: Routledge.

Jeffrey, C. (2001). "A Fist is Stronger than Five Fingers": Caste and Dominance in Rural North India. *Transactions of the Institute of British Geographers*, *26*(2), 217–236.

Jentoft, S., & Chuenpagdee, R. (2009). Fisheries and Coastal Governance as a Wicked Problem. *Marine Policy, 33*(4), 553–560.

Kadfak, A. (2019). More than Just Fishing: The Formation of Livelihood Strategies in an Urban Fishing Community in Mangaluru, India. *The Journal of Development Studies,* (online access 9 August 2019).

Kadfak, A. (2018). Intermediary Politics in a Peri-Urban Village in Mangaluru, India. *Forum for Development Studies*, *46*(2), 277–298.

Kadfak, A., & Knutsson, P. (2017). Investigating the Waterfront: The Entangled Sociomaterial Transformations of Coastal Space in Karnataka, India. *Society & Natural Resources*, *30*(6): 707–722.

Kadfak, A., & Oskarsson, P. (2017). The Shifting Sands of Land Governance in Peri-Urban Mangaluru, India: Fluctuating Land as an 'Informality Machine' Reinforcing Rapid Coastal Transformations. *Contemporary South Asia*, *25*(4), 399–414.

Knudsen, M. (2012). Fishing Families and Cosmopolitans in Conflict over Land on a Philippine Island. *Journal of Southeast Asian Studies*, *43*(3), 478–499.

Kruks-Wisner, G. (2011). Seeking the Local State: Gender, Caste, and the Pursuit of Public Services in Post-Tsunami India. *World Development, 39*(7), 1143–1154.

Kudva, N. (2014). Planning Mangalore: Garbage Collection in a Small Indian City. In G. Shatkin (Ed.). *Contesting the Indian City: Global Visions and the Politics of the Local* (pp. 265–292). Oxford: John Wiley & Sons, Ltd.

Kumar, A., & K. S. Jayappa. (2009). Long and Short-term Shoreline Changes along Mangalore Coast, India. *International Journal of Environmental Research, 3*(2), 177–188.

Kumar, A., Narayana, A., & Jayappa, K. (2010). Shoreline Changes and Morphology of Spits along Southern Karnataka, West Coast of India: A Remote Sensing and Statistics-Based Approach. *Geomorphology, 120*(3), 133–152.

Kumar, M., Saravanan, K., & Jayaraman, N. (2014). Mapping the Coastal Commons, Fisherfolk and the Politics of Coastal Urbanisation in Chennai. *Economic & Political Weekly, 49*(48), 46–53.

Kurien, J. (2007). The Blessing of the Commons: Small-Scale Fisheries, Community Property Rights, and Coastal Natural Assets. In J. K. Boyce, S. Narain & E. A. Stanton (Eds.) *Reclaiming Nature: Environmental Justice and Ecological Restoration* (pp. 23–54). London: Anthem Press.

Lawhon, M., Ernstson, H., & Silver, J. (2014). Provincializing Urban Political Ecology: Towards a Situated UPE through African Urbanism. *Antipode, 46*(2), 497–516.

Li, T. M. (2014). *Land's End: Capitalist Relations on an Indigenous Frontier*. Durham, NC: Duke University Press.

Lobe, K., & Berkes, F. (2004). The Padu System of Community-Based Fisheries Management: Change and Local Institutional Innovation in South India. *Marine Policy, 28*(3), 271–281.

Mather, C., Johnsen, J. P., Sonvisen, S., Sridhar, A., & Stephen, J. (2017). Introduction to the Themed Issue: Poststructural Approaches to Fisheries. *Maritime Studies*, *16*(1), 20.

McFarlane, C. (2011). The city as Assemblage: Dwelling and Urban Space. *Environment and Planning D, 29*(4), 649–671.

McFarlane, C., & Rutherford, J. (2008). Political Infrastructures: Governing and Experiencing the Fabric of the City. *International Journal of Urban and Regional Research, 32*(2), 363–374.

Neumann, R. P. (2009). Political Ecology: Theorizing Scale. *Progress in Human Geography, 33*(3), 398–406.

Nightingale, A. J. (2012). The Embodiment of Nature: Fishing, Emotion, and the Politics of Environmental Values. In Brady, E. & Phemister, P. (Eds.), *Human-Environment Relations* (pp. 135–147). Springer: Dordrecht.

Nightingale, A. J. (2014). Society-Nature. In R. Lee, N. Castree, R. Kitchin, V. Lawson, A. Paasi, C. Philo, S. Radcliffe, S. M. Roberts & C. Withers (Eds.), *The SAGE Handbook of Human Geography* (pp. 120–147). London: Sage.

Olivier de Sardan, J. P. (2005). Mediations and Brokerage. In J. P. Olivier De Sardan (Eds.), *Anthropology and Development: Understanding Contemporary Social Change* (pp. 166–184). London: Zed Books.

Osella, F., & Osella, C. (2009). Muslim Entrepreneurs in Public Life between India and the Gulf: Making Good and Doing Good. *Journal of the Royal Anthropological Institute, 15*, S202–S221.

Ostrom, E. (2008). The Challenge of Common-Pool Resources. *Environment: Science and Policy for Sustainable Development, 50*(4), 8–21.

Parasuraman, S. (1995). Economic Marginalisation of Peasants and Fishermen due to Urban Expansion: The JNP Project of New Bombay, India. *The Pakistan Development Review*, 121–138.

Peluso, N. L. (2009). Rubber Erasures, Rubber Producing Rights: Making Racialized Territories in West Kalimantan, Indonesia. *Development and change, 40*(1), 47–80.

Ranganathan, M. (2014). Paying for Pipes, Claiming Citizenship: Political Agency and Water Reforms at the Urban Periphery. *International Journal of Urban and Regional Research, 38*(2), 590–608.

Roy, A. (2005). Urban Informality: Toward an Epistemology of Planning. *Journal of the American Planning Association, 71*(2), 147–158.

Saguin, K. (2014). Biographies of Fish for the City: Urban Metabolism of Laguna Lake Aquaculture. *Geoforum, 54*, 28–38.

Smith, L. E., Khoa, S. N., & Lorenzen, K. (2005). Livelihood Functions of Inland Fisheries: Policy Implications in Developing Countries. *Water Policy, 7*(4), 359–383.

Swyngedouw, E. (2006). Circulations and Metabolisms:(Hybrid) Natures and (Cyborg) Cities. *Science as Culture, 15*(2), 105–121.

Swyngedouw, E. (2009). The Political Economy and Political Ecology of the Hydro‐Social Cycle. *Journal of Contemporary Water Research & Education, 142*(1), 56–60.

Swyngedouw, E., & Heynen, N. C. (2003). Urban Political Ecology, Justice and the Politics of Scale. *Antipode, 35*(5), 898–918.

Swyngedouw, E., Kaika, M., & Castro, E. (2002). Urban Water: A Political-Ecology Perspective. *Built Environment 28*(2), 124–137.

Thara, K. (2016). Protecting Caste Livelihoods on the Western Coast of India: An Intersectional Analysis of Udupi's fisherwomen. *Environment and Urbanization, 28*(2), 423–436.

Truelove, Y. (2011). (Re-)Conceptualizing Water Inequality in Delhi, India through a Feminist Political Ecology Framework. *Geoforum, 42*(2), 143–152.

Yin, R. K. (2013). *Case Study Research: Design and Methods* (5 ed.). Los Angeles: Sage Publications.

Zimmer, A. (2010). Urban Political Ecology: Theoretical Concepts, Challenges, and Suggested Future Directions. *Erdkunde*, 343–354.

Zimmer, A. (2015). Urban Political Ecology 'Beyond the West': Engaging with South Asian Urban Studies. In R. L. Bryant (Ed.), *The International Handbook of Political Ecology* (pp. 591–603). Cheltemham, UK: Edward Elgar Publishing.

Zimmer, A., Cornea, N., & Véron, R. (2017). Of Parks and Politics: The Production of Socio-Nature in a Gujarati Town. *Local Environment, 22*(1), 49–66.

Highlights

Highlights:

- Critiques Small-Scale Fisheries focus on access and control of marine resources
- Creates a framework of assemblage, contested urban landscape and identity politics
- Applies the framework to an Indian fishing village facing coastal transformations
- Explains how (Urban) Political Ecology can improve Small-Scale Fisheries research

Acknowledgments

Author contributions
This article builds on the PhD thesis of the first author which was completed in 2018. Her theorisation and empirical data gathering work for the PhD and this subsequent publications means that we rate her overall contribution to the paper to be 70% of overall work.

The second author co-authored an earlier article (Kadfak & Oskarsson, 2017) about the role of biophysical processes in urban land governance. This article and added conceptual development as well as writing on the present article adds up to approximately the remaining 30% of the writing.