

# From sea-level rise to seabed grabbing: The political economy of climate change in Kiribati

Marc-Andrej Felix Mallin<sup>a,b,\*</sup>

<sup>a</sup> King's College London, Department of Geography, London WC2R2LS, United Kingdom

<sup>b</sup> National University of Singapore, Department of Geography, 1 Arts Link, AS2 03-04, Singapore 117568, Singapore

## ARTICLE INFO

### Keywords:

Climate change  
Sea-level rise  
Blue economy  
Pacific island countries  
Ocean grabbing  
Deep-sea mining

## ABSTRACT

This paper presents a critical political economy perspective on recent and ongoing developments in the Pacific atoll country of Kiribati, where the issue of rising sea levels has become an incrementally politicised concern. Semi-structured interviews (n = 30) with decision-makers, policy advisors, scholars, and community elders were conducted in multiple sites to scrutinise the politics that frame the country's environmental predicament. Findings indicate that: (1) irrespective of considerable scientific uncertainties and data inconsistencies, previous governments have fervently abided by a 'sinking nation paradigm', unreasonably constraining political visions of the nation's future; (2) consequentially, 'adaptation' has become a metaphor for economic development conceptions, which are tied to mounting budgetary requirements; (3) climate aid is sought for adaptation initiatives irrespective of the needs and desires of island communities; (4) incentives to develop a blue-green economy have facilitated the emergence of highly problematic deep-sea mineral (DSM) initiatives, which this study regards as precursors to *seabed grabbing*. The paper, therefore, posits that marine policy makers in Kiribati – and other small-island developing states (SIDS) – need to be more vigilant to wider political economic agendas when considering options for ocean and coastal governance. Researchers and practitioners have an important role to play in this regard by privileging preferences and perceptions from coastal communities, to ensure well-informed policy decisions in times of ecological uncertainty.

## 1. Introduction

Few would dispute that rising global sea levels signify one of anthropogenic climate change's most daunting properties. Following the release of the second and subsequent assessment reports of the Intergovernmental Panel on Climate Change (IPCC), the phenomenon has become particularly associated with low-lying atoll countries in the Pacific [1]. Attention-grabbing media representations of “drowning islands” as well as the vociferous stance of SIDS at international climate negotiations have lent them a distinct reputation as “guinea pigs” or “canaries in the coalmine” [2–4]. By the same token, this heightened level of attention testifies to prescient debates amongst scholars, deliberating the extent to which climate change-induced sea-level rise (SLR) will impair the livelihoods in Pacific atoll countries [5,6]; elicit environmentally induced migration movements [7–12]; and culminate in a large-scale loss of land – and perhaps even maritime entitlements [13–15].

Looking specifically at the Republic of Kiribati, this paper contends that a politically motivated emphasis on the inevitability of ecological

disaster has been mobilised to set the country on a political course that essentially regards the prospect of SLR as an all-dominant obstacle to the nation's ‘development’. Whilst financially costly adaptation and relocation strategies have been accorded priority, historically rooted principles of self-sufficiency, solidarity, and frugality are increasingly taking the backseat, producing additional socio-economic limitations for a population already facing uncertain environmental changes. Instead, a policy-contingent rise in fiscal requirements has led a small group of decision-makers, in conjunction with foreign investors and advisors, to push for the exploitation of Kiribati's extensive deep-sea mineral (DSM) resources. This paper will argue the case for interpreting current DSM undertakings in the context of Kiribati as a clear occurrence of an emerging ‘marine resource grab’. The term *seabed grabbing* is coined to describe the nature of the process by which control over decision-making on mineral resources has been seized by powerful actors.

To scrutinise the underlying linkages, the paper adopts a political economy lens informed by a multi-sited qualitative study conducted in 2016, which raises a number of questions. Firstly, it asks whether the

\* Correspondence address: National University of Singapore, Department of Geography, 1 Arts Link, AS2 03-04, Singapore 117568, Singapore.  
E-mail address: [felix.mallin@u.nus.edu](mailto:felix.mallin@u.nus.edu).

political framing of SLR in Kiribati has employed lopsided socio-ecological narratives. Secondly, whether the interlocking of climate change and sustainable development discourse has constrained the spectrum of political visions. If so, has it increased financial revenue considerations over other socio-political issues? Lastly, to what extent may the prospect of rising fiscal requirements for adaptation or relocation options be co-opted to stimulate non-renewable resource extractivism? Has the political-legal institution-building process around DSM in the Pacific guided Kiribati into a socio-ecologically viable direction?

In posing these questions, the paper explicitly engages with scholars, policy-advisors and decision-makers in the Pacific region, who work at the interface of climate adaptation, economic development and ocean governance, interrogating the political economic logics arising from the current trajectory, as well as the policies used to tackle the challenges at hand. To begin with, Section 2.1 gives an orientation of the paper's theoretical and conceptual background; 2.2 provides some relevant background on Kiribati's geography and mining history; and 2.3 briefly summarises the methodological approach underpinning this study. Based on the analysis of grounded empirical data, Section 3 then systematically examines the problematic relationship between environmental disaster discourse, economic development planning and the evolution of a DSM-focused extractive regime in Kiribati.

## 2. Theoretical frame and study design

### 2.1. Theoretical frame

The geographer Mike Hulme [9,10,16,17] argues that the “dominating construction of climate change as an overly physical phenomenon readily allows climate change to be appropriated uncritically in support of an expanding range of ideologies.” According to his understanding, it is the ahistorical, depoliticising and “de-culturating” ways in which environment and climate are being framed by those institutions that dominate the global mainstream discourse that have led to “endow climate change with a near infinite plasticity.” The same level of plasticity has then come to define the most prevalent socio-ecological development conceptions, such as ‘sustainable development’, ‘sustainable adaptation’ or ‘green development’, which are staged as political responses to the environmental predicament [18–21]. In particular, political economists working in the political ecology tradition have taken the task upon them to demonstrate how a mix of technocratic, managerial, and market-focused strategies has mostly ignored the political economic root causes that produce or exacerbate vulnerability to ‘environmental disasters’ in the first place [22]. Furthermore, they have shown how the dominant ‘eco-paradigms’ were consistently undermined such that they could be deployed to legitimise a continuation of status-quo politics and expanded resource exploitation [23].

Gaining particular traction over the past decade, the “green economy” transformation has been described as one such political project [24], following which highly destructive industries are being shifted to locations, where the adverse socio-environmental impacts of production and extraction do not have to be economically internalised [21,25,26]. The “blue economy”, with its attention to the “sustainable development” of Exclusive Economic Zones (EEZ) of SIDS [27], has extended similar conceptions to the maritime domain [28]. In mainstream economic and elite policy discourse, many of the interventions advanced under these schemes are usually serving some common cause (e.g. ‘win-win’, ‘benefit-for-all’), whilst frequently seeing the enclosure of land, resource grabs, and the (violent) dispossession of people as their localised outcomes [29–31].

A prime arena of critical inquiry within political economy, land grabbing in relation to extractive industries is a well-documented subject matter, especially for parts of the Western Pacific [32–34]. However, critical studies on non-fishery targeted forms of enclosure still lack a sound conceptual toolbox. A first step is offered by Bennet et al., who conceptualise ocean-grabbing as “dispossession or appropriation of use,

control or access to ocean space or resources from prior resource users, rights holders or inhabitants. Ocean grabbing occurs through inappropriate governance processes and might employ acts that undermine human security or livelihoods or produce impacts that impair social-ecological well-being” [35,62]. In this view, the study of ocean grabbing then is a “normative exercise” that is to be rooted within the force field of (good) governance, (ethical) principles and political agency. Although a useful vantage point to reason on existing and emerging forms of marine spatial enclosure (e.g. conservation, bio-harvesting, tourism), it is difficult to apply this framework to DSM, where the term ‘dispossession’ has little purchase, as immediate impacts on “social-ecological wellbeing” will be extremely difficult to trace at this stage. Moreover, their framework has too little avail for thinking beyond a reformist political approach.

Similarly, early discussions spiked by the acceleration of DSM projects have largely been confined around questions on how to determine appropriate environmental standards and social outcomes, but have cautiously avoided the notion of ocean grabbing as well as a more systematic engagement with the wider political economy of DSM [36–38]. In spite of scientists’ warnings as to the largely unknown ecological consequences of DSM, the bulk of the debate seems to be restricted to political pragmatism [39]. The only remaining questions appear to be: when, where (not), and to what extent. By offering the heuristic term of seabed grabbing, this paper will instead argue that averting potentially adverse impacts stemming from future DSM industries will entail much more than a normative exercise of finding appropriate policies, codes and standards. Rather, it holds that in the case of Kiribati critical engagement with the emerging DSM regime has to be linked back to critical discussions about: firstly, the uncertain environmental manifestations of future climate change; secondly, the development paradigms that support rising demands for minerals; thirdly, histories of externally-inflicted environmental havoc; and lastly, the power structures that underpin the political and legal-institutional apparatus that currently governs marine spaces and resources [40].

### 2.2. Brief overview over Kiribati's territorial and resource history

#### 2.2.1. The largest EEZ among Pacific Island countries

Kiribati comprises of the single raised atoll Banaba and 32 low-lying atolls, which are officially grouped from west to east into three island chains: Gilbert Islands, Phoenix Islands and Line Islands (see Fig. 1). Though not parts of the Gilbertese ancestral homeland (Tungaru) prior to British colonial occupation, the rush for phosphate deposits and cheap labour between different colonial powers in the Pacific, led to the successive incorporation of most of the previously uninhabited Phoenix and Line Islands under Gilbertese administration over the course of the twentieth century [41,42]. Together with the Ellice Islands, now Tuvalu, these island groups – arbitrarily assembled by British administrative arrangements – formed the Gilbert and Ellice Island Colony between 1916 and 1975. Upon independence in 1979, the nature of colonial bordering consequently allowed for Kiribati to lay claim upon a discontinuous and tripartite, EEZ of more than 3,5 Million km<sup>2</sup> under the 1982 Convention on the Law of the Sea (LOSC). Even with a land area of less than 811 km<sup>2</sup>, the LOSC provisions turned Kiribati into the twelfth largest country globally in terms of aggregate maritime jurisdiction. Since independence, highly volatile royalty incomes from distance water fisheries have constituted an increasingly disproportionate economic determinant in Kiribati's budget composition. Between 2014 and 2016, licence fee revenues alone amounted to about 80% of gross domestic product on average, followed by overseas investments, remittances, and copra exports [43].

#### 2.2.2. Extractive experiences: the exploitation of phosphate in Banaba

In order to fully understand the contemporary developments discussed in this paper as part of a contingent historical process, it is

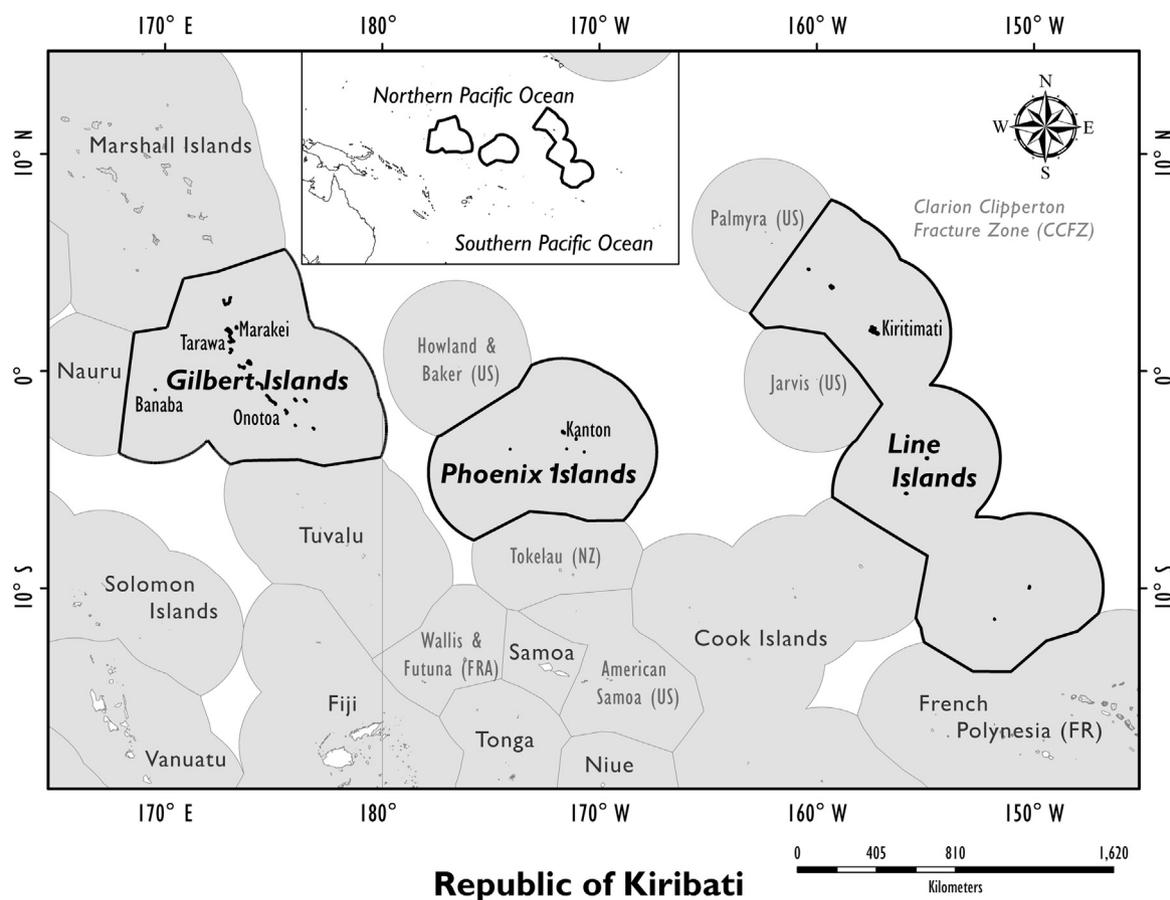


Fig. 1. Map of the Republic of Kiribati, featuring provisional EEZ boundaries.

crucial to include a brief elaboration on the destructive legacy of phosphate mining in Banaba. In 1901, following the discovery of abundant phosphate deposits, Banaba (Ocean Island) – despite having no significant political ties with the Gilbert islanders at the time of European intrusion into the area – was incorporated into the otherwise resource-poor British Gilbert Island Protectorate. Over the course of 80 years, these deposits were nearly exhausted by British mining companies and exported as cheap fertilizers for agricultural production to Australia, New Zealand and Japan [44]. The Banabans were forcefully resettled to Rabi island in Fiji in 1945, where they and most of their descendants remain up until the present day. Meanwhile, almost all royalties from mining had flown to London and were used to fund the colonial administration. Only during the final years of the colonial era, as the British government sought to free itself from any potential financial liabilities upon decolonisation, it set up a sovereign wealth fund (RERF) into which 75% of the royalties during the last ten mining years were paid [42,45].

The dissolution of the colony awarded Banaba as well as the RERF to the newly formed Kiribati state, leaving the island behind in a desolate, largely untenable ecological condition. Only a few hundred people have returned as caretakers since [46]. Colonial politics, extractivism and an uneven distribution of power, ultimately drew divisive lines between the Banabans, the Gilbertese and the Tuvaluans during the cumbersome decolonisation process [42,47]. Owing much to these circumstances, Banaba, together with Nauru, remains a monument of imperial exploitation, uneven benefit distribution, and ecological havoc to the region up until the present day. The RERF, on the other side, was later stocked up with excess revenues from fisheries and invested into global capital markets, where it gained considerably in value. In 2016, the RERF was valued at approximately 868 million Australian Dollars [43]. The fund has occasionally been used to finance budget overdrafts.

### 2.3. Study sites and methodology

This study is informed by a multi-sited, qualitative interview-focused approach as briefly summarised in the following. The overall objective was to provide nuanced insights into processes of political decision-making and their wider implications for communities in Kiribati. There were then several reasons for amplifying the investigative scope beyond Kiribati's political capital. Firstly, the modern political geography of Kiribati is such that all high-level political decision-making as well as control over capital flows is concentrated on the densely urbanised atoll of South Tarawa. Conversely, the population of most other islands remains engaged in subsistence farming and fishing, while enjoying a certain level of political autonomy. In policy as well as everyday discourse, this uneven relationship is implicitly present in the distinction between 'main island' (South Tarawa) and 'outer islands'. It is also reflected in the overall distribution of Kiribati's population, both in between the three island chains, and within the Gilbert group. Around 56,000 of a total population of 110,000 people are currently dwelling in South Tarawa alone. Except for Kiritimati, Tabuaeran and Tereina (Line group) and a minor settlement in Kanton (Phoenix group), the eastern groups remain uninhabited and very hard to access from the Gilbert group [48]. Secondly, few foreign and multilateral agencies have offices or embassies in Kiribati, as a result of which consultants are usually flown in for limited amounts of time. Therefore, parts of the research had to be conducted in Suva, Fiji, where many regional institutions have their headquarters or branch offices.

The first group of respondents ( $n = 15$ ) consisted of high-ranking members of the current and former governments; current and former officials from a range of ministries; local dignitaries and scholars. A second group ( $n = 8$ ) was recruited from regional multilateral institutions, development banks as well as foreign development agencies.

Portfolios ranged from matters as diverse as climate adaptation, resource governance, legal affairs and finance. A third group ( $n = 7$ ) comprised of community elders in the atolls of Marakei and Onotoa. Elders, in Gilbertese *Unimane (old men)* and *Unaine (old women)*, assume complex functions of moral and local political authority on all outer islands [49]. Four interviews from this category were conducted with the help of a local translator.

Selection of respondents followed the snowball principle, such that interviewees were identified based on recommendations by other key informants. Semi-structured interviews revolved around the topics outlined in part 1 and 2.1 of this paper; were conducted in person, and lasted between thirty minutes to three hours. Questions were usually formulated in an open-ended way so that they could trace out descriptive aspects underlying political decision-making processes, topical issues, as well as individual judgements and interpretations. Although the majority of interviews was tape recorded, the highly sensitive nature of the content discussed with some respondents required the strict absence of tape recorders, and information was instead logged by means of shorthand notes and memory. In addition, informal conversations held with consultants, diplomats and government officials during conferences and workshops were documented by means of participant observation field notes. All interview transcripts and field notes were coded with NVivo software, whilst sensitive details were anonymised to prevent deductive disclosure [50]. Coded interview and conversation transcripts were then thematically and structurally analysed to identify relevant themes and linkages within and between different groups of respondents [51]. The findings were subsequently interpreted on the basis of the overall theoretical frame of the study.

### 3. Findings and discussion

#### 3.1. The ‘sinking nation paradigm’

One of the principal political legacies attributed to former President Anote Tong are his efforts to position Kiribati as a global icon of the dangers posed by SLR. Over the course of three administrations from 2003 to early 2016, his statements, warnings, and appeals, were reiterated by most global media outlets, circulated via radio broadcasts within the country, and generally depicted Kiribati as a climate change experiment that will be rendered untenable or even entirely disappear within a few decades. The over-arching political interpretation of climate change found expression in the government's first long-term climate change strategy document, in which Tong's opening statement framed his nation's future as a one-way road: “Kiribati has known for some time that the impacts of climate change will no doubt render it uninhabitable in the future” [52]

In light of what an I-Kiribati historian coined a “*sinking nation paradigm*” (#1), the Tong government's climate strategy regarded in-situ adaptation as a transitory solution, whereas the key policy became the pre-emptive “migration with dignity” approach that vowed to make the population economically versatile and sought after for eventual resettlement to other countries [53]. Tong's determination to continue along this avenue was prominently showcased, for instance, by a land purchase deal struck with neighbouring Fiji [54].

#### 3.2. The contradictory political ecology of rising oceans: between science and conviction

Though there has been a consistent scientific consensus that low-lying atolls are particularly susceptible to changes in sea levels [55,56], the dominant political voices in Kiribati and the global media have long favoured a simplistic “world-as-a-bathtub scenario” [57] over more nuanced depictions. A key feature of the bathtub model is that it condenses the ecological complexity of SLR to that of a linear process: a slow but steady increase in water levels. This representation, however, masks enduring scientific uncertainty over the ways in which reef

islands might respond to climate change. For many years, studies that estimate the arrival of untenable conditions for Kiribati occurring within a matter of decades stand juxtaposed to research, which does not rule out the future erosion of atoll islands, but indicates a potentially much higher geomorphic resilience of atoll structures than presently assumed [58–62].

While many questions remain with regards to the geophysical and biogeochemical responses of reef islands to climate change, official political discourse has equally glossed over a lack of existing grounded empirical data on Kiribati's atolls. Even as certain manifestations, such as increasing temperatures, droughts, tidal events, freshwater salinization and local shoreline erosion have been documented on several atolls [63], it appears that many internationally and internally circulated statements about Kiribati's existing exposure to SLR are not well supported by actual measurements. A civil servant in South Tarawa lamented the apparent gap, “*To predict the impact of sea-level rise on the land, we would need to have an accurate understanding of how high our land is. That, we don't have anywhere in Kiribati. We got a bit of information for South Tarawa, but even that is quite poor*” (#2). This statement was reaffirmed by a climate consultant, “[*There*] *isn't an official mean sea-level for Kiribati... Given that this is such a political issue, wouldn't you think that the government bases its arguments on a scientifically derived measure of sea-level rise, a mean from which we could track how much it actually changes? They have not done that yet*” (#3).

The crucial point here is neither to advocate a sceptic perspective as to the potentially devastating effects of SLR, nor to foster any particular scenario. Rather, the dearth of local statistics and the persisting scientific uncertainty begs another question; has the Tong administration's endorsement of fatalistic prospects silenced alternative versions of Kiribati's future? Respondents from all three groups generally concurred that, at the top level of government, a singular political line had by and large blended out inconvenient observations and other forms of knowledge that did not match the desired political line. A foreign development advisor signified the socio-ecological implications of this partisan choice, “*All eyes were always directed to the message that sea-level rise will submerge the islands within the next thirty years... And, of course, it sounds terribly threatening when you tell someone your home isn't there anymore in thirty years... It also silences all these ecological processes, where atolls have dynamically risen*” (#4).

In the wider scheme of things, the intense politicisation of SLR that has occurred in Kiribati over the past two decades has arguably turned the actual phenomenon more into an issue of political conviction than that of an ecological process attached with considerable uncertainty. This aspect was emphatically brought up by respondents in Marakei, “*Some believe in it and others don't. They think it is an individual thing like your confession. But the truth is, the people here have no clue about climate change. They break the rocks out of the reef and take the sand from the beach in the morning, and in the evening they worry about climate change*” (#5). It was also noted how the decade-long presence of fear-propelling announcements had left a bearing impact on people's attitude towards a self-determined future on their home-islands, “*Though Anote [Tong] said all these things about climate change, there are still many people here, who don't believe him and who don't think these nightmares are going to come true. We are still ok here, we don't have problems, but the more you talk about it, the more you believe you have a problem*” (#6). A similar sentiment was more drastically formulated by a dignitary in South Tarawa, “*It's going to trigger the same reaction as in the Solomon Islands, where people ask themselves what is the use of taking care of our land, if we have to live like fish in the future anyway*” (#7). Such and other contestations of the predominant SLR narrative advanced during the Tong era corresponds with observations by elders in Onotoa (#8, #9) and a consultant in Suva (#10), who stated that disaster-focused perspectives had notably triggered counter-productive effects on environmental consciousness within some communities by procuring a feeling of disempowerment and resignation.

### 3.3. The political economy of climate change in Kiribati

An uneven distribution of political agency in defining the grounds of future-oriented development visions and decisions appeared even more pronounced in the sphere of climate ‘adaptation’. Here, a common complaint voiced by I-Kiribati respondents was that existing local knowledge and community-driven responses to environmental changes did not receive the same level of political support as complex centrally-administered projects linked to foreign climate funding schemes. A former government official saw the reasons for this imbalance in the outward-oriented slant of climate politics, “*We mainly saw climate change as a money prospect; the GEF [Global Environment Facility] and all the other climate-related funding streams, we saw them as big opportunities even if we never got much out of them*” (#11). Over the years, this narrow political-institutional alignment towards the monetary allures of foreign funding schemes has produced a powerful climate-development-finance nexus, increasingly driven by technocratic-managerial ideas of environmental governance [64,65].

Moreover, the political race for climate finance that increasingly came to circumscribe Kiribati’s political imagination, has simply reinforced the country’s long-standing problem of “AIDdiction” under a different guise [66]. This is most pertinent on the institutional-governmental level, where the power polarising nature of climate finance had translated into a dynamic of bureaucratic competition rather than cooperation, as a high-ranking civil servant commented, “*In the case of climate change, everybody wants a piece of that cake, especially of that financing. And the ministries they pick this up as well. They all want to pull climate change to their respective ministries*” (#12).

The launching of the Kiribati Joint Implementation Plan for Disaster Risk Management and Climate Change 2014–2023 and the establishment of a national climate change coordination office testified somewhat to a wider recognition amongst government and donor institutions that the existing institutional setup was not able to deliver effective results. The consultative process that led to the new framework largely attributed existing deficiencies to capacity issues and a lack of donor coordination (#13). Yet, even as the new planning documents recognised that locally produced environmental problems and structural vulnerability had to be more carefully assessed, the fact that patterns of uneven development were hardly going to be diminished by a focus on climate and disaster risk became more and more evident over the years, as a government advisor indicated “*With all this climate focus, the government [and the donors] are only able to solve bits and pieces here and there, but issues like beach-mining, waste, urbanisation are never really tackled. These are all ad-hoc issues, whereas climate change is a long term issue*” (#14).

On the flipside, the leverage of the climate-finance nexus on political decision-making reveals a picture, in which ‘adaptation’ becomes a political tool to advance a one-sided economic development agenda, “*Like other Pacific countries we are now labelling climate change adaptation as a development issue. But that totally takes the fate out of our own hands. We have been trying to delineate the boundaries between what really is adaptation and what is a development issue, because certain forces constantly push it together*” (#15). The effects of the socio-economic reorientation are especially felt on the outer islands, where people primarily rely on subsistence fishing and crop planting. In the case of Onotoa, which has a deeply rooted tradition of frugality to cope with environmental stress, neglect of traditional storage and plantation methods was clearly linked to the government’s climate vision, “*when the sea-level rise comes only cash and education matters to the parents, because they have to send their kids away to New Zealand or Australia*” (#16). Reflections by elders in Marakei further revealed that adaptation was more and more seen as a competitive process, where different families had to secure their own stakes (#17). An I-Kiribati scholar even postulated that the government’s adoption of neoliberal conceptions of adaptation [67] with its appeal to voluntarist principles “of sustainable development and more resilient communities” [68] was “*cancelling the whole idea of*

*self-sufficiency*” for outer island communities (#18).

The election of opposition party candidate, Taneti Mamau, during the 2015 elections was then partly driven by wider discontents resulting from the unidirectional political agenda of the Tong administrations. To garner popular support, the new government set out to shift development discourse away from migration and relocation (#1). Instead a focus on neo-Malthusian concerns about overpopulation and land scarcity in the crowded capital island was adopted, which the government has since sought to tackle with agricultural subsidies for outer island copra exports. Because of the hefty budget strains posed by this measure, the environmental determinist fallacy of justifying rising fiscal requirements on the grounds of development-constraining land scarcity did not fade, but has rather been exacerbated. At the same time, the official climate strategy and most of the donor-financed adaptation projects still remain tied to the climate politics of the Tong era (#19) [69].

### 3.4. Deep-sea minerals as a way out of or into dependency?

The final two sections will shed light on the ways in which the afore-described hegemony of a climate disaster vision in Kiribati politics connects on to the recent emergence of DSM initiatives. These initiatives are then problematised against the backdrop of regional DSM governance and policy-making processes.

#### 3.4.1. Non-renewable resources for renewable energies

During the past decade, climate change concerns in Kiribati have been inserted into a wider discursive shift around a Pacific blue economy, meaning seaward focused resource developments, as promoted by regional ocean governance strategies and leaders’ statements [70–72]. In 2009, the Framework for a Pacific Oceanscape was developed under Tong’s stewardship, which fuses environmental sustainability discourse with ocean governance and resource development ambitions. For Kiribati, the development of its ocean-borne economic potentials became positioned as a means to move away from reliance on volatile fishing licence revenues and overseas development aid, as noted by a former political director “*Some of them in the ministries and the I-Matang [refers to foreign consultants], they kept saying we need to have more fiscal independence, we cannot only rely on the RERF, the tuna is going to run out soon. We need to pay by ourselves for seawalls, dredging, buying land overseas.... That was when deep-sea minerals really re-entered the picture for us*” (#20).

Although early geological surveys in Kiribati date back to at least 1979, when the South Pacific Applied Geoscience Commission (SOPAC), then under the Committee for Coordination of Joint Prospecting for Mineral Resources in South Pacific Offshore Areas (CCOP), began to investigate manganese nodules and cobalt-rich crust deposits in the waters around all three island groups, a realistic prospect of industrial mining only gained full traction during Tong’s premiership. In this sense, it went hand in hand with the region-wide galvanisation of DSM industries, which was brought about by advances in deep-water technologies and a rising industrial demand for minerals, such as copper, silver and several rare earth elements.

So-called ‘green energy technologies’ (e.g. wind turbines, photovoltaic, batteries, electric cars), often propagated as crucial for climate change mitigation and “low-carbon futures” [73,74], have played an important role in rising demands. A report entitled ‘Deep Sea Minerals and the Green Economy’, commissioned by the Secretariat of the Pacific Community (SPC), clearly establishes the relationship between DSM and the political economy of climate change [13,75]: “*deep sea mining could provide Pacific island states (many of which are vulnerable to rising sea levels) with the opportunity to supply the world with the metals required to build these clean energy technologies.*” A former minister in Tarawa pointed to the dubious logic concealed behind this rhetoric, “*DSM, what an ironic story! First they tell us we have a problem because the Western countries burn too many non-renewable fossils and now*

the same countries want to take our non-renewable minerals to solve the problem?” (21). The apparent ‘irony’, however, needs to be carefully evaluated in the context of I-Kiribati politicians recurrently pressing for mitigation measures during international climate negotiations.

### 3.4.2. Kiribati and the EU-SPC Deep Sea Minerals project

The practical development of a future DSM industry in Kiribati has taken a rather fraudulent course. In the absence of a DSM policy and outdated legislation, predatory investors had attained survey and exploratory leases by bribing high-ranking officials, both with respect to areas within national jurisdiction as well as Kiribati's sponsorship area in the Clarion-Clipperton Fracture Zone (CCFZ), “*The way they are approaching our government is by saying: there is a lot of benefit; there is a lot of money which you need for adaptation. And that's just for the exploration alone where they check out where your minerals sit. They are putting those dollar signs to the heads of governments and the other ministers and tell them that they benefit from it*” (#22). Several public officials also confirmed that mining companies had been suspected of, and even caught, illegally prospecting in national waters. This is reminiscent of survey activities conducted by Japan, West Germany and the USA in Kiribati waters during the 1980s, which had taken place “without prior blessing of the Kiribati government” [9,45].

Partly in recognition of this problematic, the EU-financed SPC-EU EDF10 DSM project was implemented by SOPAC's successor, the SPC Applied Geoscience and Technology Division (SPC SOPAC/AGTD), between 2011 and 2016. Under the mantras of “good governance” and “capacity-building”, the project offered a range of preparatory and instructive activities to Kiribati and other regional countries, including workshops, consultations, trainings, internships and legal advice [76]. When the news of illegitimate prospecting and exploration surfaced in Tarawa, many concerned stakeholders saw the exigency of the project confirmed, “*Some of these big mining companies were even offering to draw up legislation for the countries. I mean what kind of disaster is that? From that perspective, telling countries to not sign these things, get legislation and policy in place, seek assistance from a third party agency like SOPAC. SOPAC is perfectly placed to do that because they exist to serve the interests of the countries, nothing else*” (#23).

Yet, this perspective was contrasted by the very different stance taken on the independent nature of SPC by the former director of an intergovernmental organisation, “*SOPAC was initially set up by the British government to raid the Pacific for minerals and other resources, they were sort of a geological survey institution. So the morality of SOPAC is sketchy at best, and that hasn't changed. They are on with deep-sea mining now, they just can't help it... And the EU, who is financing their project is at the forefront of industry development*” (#24). Even if SPC, unlike SOPAC earlier, does not openly advocate or persuade governments to engage in DSM, the implication of the organisation in the provision of many facilitative services make it a complicit intermediary rather than an independent advisory board. Such services include the improvement of knowledge on resource deposits through geological survey data; the centralisation of spatial management through marine spatial planning; advise on questions of legal certainty by helping countries to declare maritime boundaries; in sum, instruments that generally reduce risks and produce “*investor-friendly climates*” (#25).

In this sense, regional ocean governance frameworks, such as the Pacific Regional DSM Framework [77] as well as the EU-SPC project's advice on national policy and legislative processes may be able to wrap future DSM activities into a legal-institutional costume. They may also advocate regional mining standards guided by the precautionary approach, or perhaps even propose a regional DSM treaty [38]. Yet, as many officials indicated to the author following a national DSM consultation in Tarawa in May 2016, such measures would not realistically guard against unlicensed and potentially ecologically harmful activities to take place in Kiribati waters. A high-ranking official expressed some of these concerns, “*It is a big burden to take the precautionary approach and then do a lot of measures. I do understand the importance of the*

*legislation to safeguard us, but the actual monitoring work is very difficult. We now have the observer system, placing observers on foreign vessels to look after our fisheries. We don't really know if that is efficient enough, they could just be taken by bribes and then come back and report differently. You don't know what is happening out there*” (#26).

The DSM project also stands in a contradictory tension with Kiribati's establishment of the then largest Marine Protected Area in the world in 2008 (Phoenix Island Protected Area) [78], as well as Tong's 2015 call on world leaders for a coal mine moratorium [79]. For a ministerial director in Tarawa, this was indeed one of the reasons why DSM developments had largely taken off behind the scenes, “*If all this activity had gone to the public, people, the media, would come and question the integrity of our government. Conservation here and mining next door, I mean, honestly, how credible does that make your political intentions?*” (#27)

The decision to engage in DSM and the ongoing establishment of a legal-institutional basis for future DSM undertakings had seemingly not reached most of the population by the time this study was conducted. Nearly all respondents in Marakei and Onotoa were not familiar with the process; a single respondent in Onotoa recalled that a visiting member of parliament had once mentioned “*a great treasure under the ocean waiting to make us all rich*” (#28). A former minister even went so far to argue that, if the government had consulted the entire population, most people would have strongly opposed DSM against the backdrop of Kiribati's existing ecological dilemma as well as its historical mining experiences, “*...I think with this issue of mining, we have experienced the detrimental impacts with Ocean Island (Banaba). It would be very hard for Kiribati to again accept the consequences of this*” (#7). The fact that Kiribati will have no monopoly over DSM in the Pacific also casts significant doubt over promised revenue prospects. With similar developments taking place in neighbouring countries and the CCFZ, it is likely that competition for investors between different areas will drive down royalties and fees significantly.

In spite of all these concerns as well as protests by church and community leaders in Tarawa calling on the government to freeze all activities until authoritative, industry-independent scientific studies on potential environmental effects are available, the Parliament of Kiribati passed a Seabed Minerals Act in May 2017. In effect, the bill strongly favours mining interests by designating the lion share of decision-making power to a single entity (a future DSM ministry), which will only be accountable to a technical advisory committee, whose members are to be exclusively appointed by the DSM minister [[80]: para 9 & 30]. Regardless of stated intentions to adhere to the precautionary principle, several respondents were convinced that even with legislation in place there was a high likelihood of developments to commence long before any reliable scientific knowledge on potential implications existed; all provided that technical capabilities would allow so in due course (#27, #29, #30).

## 4. Conclusion

As a recurrent site of externally-inflicted large-scale environmental destruction, whether as a major battle ground in World War II [81], as a nuclear test range for Britain and the United States [82], or as a source of cheap phosphates [46], Kiribati has long defied the popular geographical imagination of a remote island nation. By adopting a political economy lens, this paper highlights how the phenomenon of SLR – as a valid and highly important concern for Kiribati – has been framed in such a way that the lines between ecological complexity, local environmental challenges and financially-driven interests are consistently blurred. The outcome is a problematic positioning of revenue considerations as the principal answer to potential future adversities. At the current juncture, it is, therefore, paramount for Kiribati to cautiously untie the daunting prospect of SLR from green/blue-development ideologies and the politics that promote them. Otherwise, SLR will simply serve as another “*malleable envoy*” [16] for the next round of

resource exploitation and environmental destruction to take its course.

While the paper has highlighted the specificities of the Kiribati case, it speaks to a broader set of policy issues concerning contemporary conceptions of ocean governance. In particular, the study demonstrates that island communities' perceptions and preferences towards adaptation strategies may still be neglected by both researchers and policy-makers – as already found elsewhere [83]. In this light, it is argued that communities must play a crucial role in marine and coastal policy formulation, and that it is vital that they participate in knowledge sharing and are foregrounded in solution-framing. This can lead to culturally-sensitive and locally-supported management decisions, that may balance or even repel those prescribed via top-down ideologies. Numerous studies highlight how engagement with coastal communities can identify unexpected (and often low-cost) management preferences; for example, when evaluating adaptation strategies in coastal communities of the Philippines, Jamero et al. found that in-situ modifications to housing were preferred over permanent relocation to the mainland – despite government authorities endorsing and already implementing the latter [84]. Similar studies have taken place in Kiribati, albeit in the context of water management [85]. Emphasis is now on the research community to apply such methods, and the insights they can provide, into the coastal and marine policy arena. Eliciting the awareness and acceptability of island communities towards existing and proposed marine governance strategies may be a useful starting point [86].

In terms of marine resource management, the findings advocate that marine policy formulation on DSM – an impending activity not only in Kiribati, but also Papua New Guinea and the Red Sea – is timely and important. However, policies and frameworks are unlikely to exert sufficient leverage if they remain divorced from questions “about the

political economy, about the distribution of power” [21]. In light of both Kiribati's past and contemporary environmental dilemmas, authorising any kind of DSM operations that predate the availability of authoritative scientific research on potential ramifications on deep-sea ecosystems and interrelated ecological processes [87,88], needs to be interpreted as a form of seabed grabbing and thus condemned as highly irresponsible.

### Acknowledgements

The author would like to thank the numerous individuals in Fiji, Kiribati and Singapore that supported this project with their valuable time and resources. Special acknowledgement is given to Greg Fry, Nikki Baker, Sandra Tarte, Pelenise Alofa, Tinaai Tenua, Shona Loong, Woon Chih Yuan, James Sidaway, T.P., and Ben Thompson. Thanks also to the Politics, Economics and Space (PEAS) research group at the Department of Geography, National University of Singapore for reading and commenting on an earlier draft; and Wang Guanxing for helping with the preparation of Fig. 1. Finally, anonymous referees and the patient Special Issue editors enriched this article, but neither they nor any of those named here are responsible for the interpretations.

This project was made possible through the Graduate Research Support Scheme (GRSS) granted by the Faculty of Arts and Social Sciences, National University of Singapore.

### Declarations of interest

None

## Appendix A

See Table A1

**Table A1**

Interview respondents in order of chronological appearance, categorized by position/role and interview location.

N°	Position or role	Location
#1	Academic researcher (I-Kiribati)	Suva
#2	Public official (I-Kiribati)	South Tarawa
#3	Regional consultant	South Tarawa
#4	Regional consultant	Suva
#5	Unimane/Old man (I-Kiribati)	Marakei
#6	Unaine/Old woman (I-Kiribati)	Marakei
#7	Dignitary (I-Kiribati)	South Tarawa
#8	Unimane/Old man (I-Kiribati)	Onotoa
#9	Unimane/Old man (I-Kiribati)	Onotoa
#10	Regional consultant	Suva
#11	Former high-ranking government official (I-Kiribati)	South Tarawa
#12	Public official (I-Kiribati)	South Tarawa
#13	Government advisor (I-Kiribati)	South Tarawa
#14	Government advisor	Suva
#15	Former public official (I-Kiribati)	South Tarawa
#16	Unaine/Old woman (I-Kiribati)	Onotoa
#17	Unimane/Old man (I-Kiribati)	Marakei
#18	Academic researcher (I-Kiribati)	South Tarawa
#19	Environmental activist (I-Kiribati)	South Tarawa
#20	Former public official (I-Kiribati)	South Tarawa
#21	Former high-ranking government official (I-Kiribati)	South Tarawa
#22	Public official (I-Kiribati)	South Tarawa
#23	Regional consultant	South Tarawa
#24	Former government advisor	Suva
#25	Regional consultant	Suva
#26	Public official (I-Kiribati)	South Tarawa
#27	Public official (I-Kiribati)	South Tarawa
#28	Unimane/Old man (I-Kiribati)	Onotoa
#29	High-ranking government official (I-Kiribati)	South Tarawa
#30	High-ranking government official (I-Kiribati)	South Tarawa

## References

- [1] J. Barnett, W.N. Adger, Climate dangers and atoll countries, *Clim. Change* 61 (2003) 321–337.
- [2] I. Shaffieff, Planning for global change: the developing country and small island perspective, in: J. Pernetta, R. Leemans, D. Elder, S. Humphrey (Eds.), *The Impact of Climate Change on Ecosystems and Species: Environmental Context*, IUCN, Gland, Switzerland, 1995, pp. 1–8.
- [3] C. Farbotko, Wishful sinking: disappearing islands, climate refugees and cosmopolitan experimentation, *Asia Pac. Viewp.* 51 (1) (2010) 47–60.
- [4] R. Benwell, The canaries in the coalmine: small states as climate change champions, *Round Table* 100 (413) (2011) 199–211.
- [5] P.D. Nunn, The end of the Pacific? Effects of sea level rise on Pacific Island livelihoods, *Singap. J. Trop. Geogr.* 34 (2013) 143–171.
- [6] N. Kuruppu, Adapting water resources to climate change in Kiribati: the importance of cultural values and meanings, *Environ. Sci. Policy* 12 (7) (2009) 799–809.
- [7] R. Oakes, A. Milan, J. Campbell, Kiribati: Climate Change and Migration – Relationships between Household Vulnerability, Human Mobility and Climate Change. Report no 20, United Nations University, Bonn, Germany, 2016.
- [8] J. Barnett, On the risks of engineering mobility to reduce vulnerability to climate change: insights from a small island state, in: K. Hastrup, K.F. Olwig (Eds.), *Climate Change and Human Mobility: Global Challenges to the Social Sciences*, Cambridge University Press, Cambridge, 2012, pp. 169–189.
- [9] C. Mortreux, J. Barnett, Climate change, migration and adaptation in Funafuti, Tuvalu, *Glob. Environ. Change* 19 (2009) 105–112.
- [10] L. Allgood, K.E. McNamara, Climate-induced migration: exploring local perspectives in Kiribati, *Singap. J. Trop. Geogr.* 38 (3) (2017) 370–385.
- [11] M.T. Roman, Migration, Transnationality, and Climate Change in the Republic of Kiribati (Doctoral dissertation), Dietrich School of Arts and Sciences, University of Pittsburgh, Ann Arbor, US, 2013.
- [12] R. Smith, K.E. McNamara, Future migrations from Tuvalu and Kiribati: exploring government, civil society and donor perceptions, *Clim. Dev.* 7 (1) (2014) 47–59.
- [13] M.B. Gerrard, G.E. Wannier, Threatened Island Nations: Legal Implications of Rising Seas and a Changing Climate, Cambridge University Press, Cambridge, 2013.
- [14] K. Wyatt, Escaping a rising tide: sea level rise and migration in Kiribati, *Asia Pac. Policy Stud.* 1 (1) (2014) 171–185.
- [15] E. Bird, V. Prescott, Rising global sea levels and national maritime claims, *Mar. Policy Rep.* 1 (1989) 177–196.
- [16] M. Hulme, Geographical work at the boundaries of climate change, *Trans. Inst. Br. Geogr.* 33 (2008) 5–11.
- [17] M. Hulme, Why we Disagree about Climate Change. Understanding Controversy, Inaction and Opportunity, Cambridge University Press, Cambridge, 2009.
- [18] K. Brown, Sustainable adaptation: an oxymoron? *Clim. Dev.* 3 (1) (2011) 21–31.
- [19] T.J. Bassett, C. Fogelman, Déjà vu or something new? The adaptation concept in the climate change literature, *Geoforum* 48 (2013) 42–53.
- [20] H. Brookfield, Explaining or understanding? The study of adaptation and change, in: H. Brookfield (Ed.), *The Pacific in Transition: Geographical Perspectives on Adaptation and Change*, St. Martin's Press, New York, 1973, pp. 3–23.
- [21] W.M. Adams, *Green Development: Environment and Sustainability in a Developing World*, 3rd ed., Routledge, London, 2009.
- [22] P. Robbins, *Political Ecology. A Critical Introduction*, 2nd ed., Wiley-Blackwell, Chichester, 2012.
- [23] M. Barker, Under the Mask of Philanthropy, Hextall Press, Leicester, 2017.
- [24] U. Brand, Green economy, green capitalism and the imperial mode of living: limits to a prominent strategy, contours of a possible new capitalist formation, *Fudan J. Humanit. Soc. Sci.* 9 (1) (2016) 107–121.
- [25] C. Corson, K.I. MacDonald, B. Neimark, Grabbing “green”: markets, environmental governance and the materialization of natural capital, *Hum. Geogr.* 6 (1) (2013) 1–15.
- [26] J. Fairhead, M. Leach, I. Scoones, Green Grabbing: a new appropriation of nature? *J. Peasant Stud.* 39 (2) (2012) 237–261.
- [27] FAO, *Global Blue Growth Initiative and Small Island Developing States (SIDS)* <<http://www.fao.org/3/a-i3958e.pdf>> (Accessed 20.04 2017), 2014.
- [28] M. Barbesgaard, Blue growth: savior or ocean grabbing? *J. Peasant Stud.* 45 (1) (2017) 130–149.
- [29] T.A. Benjaminsen, I. Bryceson, Conservation, green/blue grabbing and accumulation by dispossession in Tanzania, *J. Peasant Stud.* 39 (2) (2012) 335–355.
- [30] C. Pedersen, T. Feodoroff, R. Reuter, J. Franco, N. Buxton, M. Barbesgaard, P. Vervest, *The Global Ocean Grab: A Primer*, TNI, Amsterdam, 2014.
- [31] D. Harvey, *Justice, Nature and the Geography of Difference*, Blackwell, Oxford, 1996.
- [32] G. Sosnoff, M. Moore, On our land: modern land grabs reversing independence in Papua New Guinea, 2013.
- [33] M.G. Allen, *Resource Extraction and Contentious States, Mining and the Politics of Scale in the Pacific Islands*, Palgrave Pivot, London, 2018.
- [34] M.C. Howard, *Mining, Politics, And Development in the South Pacific*, Westview, Oxford, 1991.
- [35] N.J. Bennett, H. Govan, T. Satterfield, Ocean grabbing, *Mar. Policy* 57 (2015) 61–68.
- [36] I.U. Jakobsen, N. Matz-Lück, Environmental standards for deep seabed mining: introduction, *Mar. Policy* 70 (2016) 174.
- [37] L.A. Levin, K. Mengerink, K.M. Gjerde, A.A. Rowden, C.L. Van Dover, M.R. Clark, E. Ramirez-Llodra, B. Currie, C.R. Smith, K.N. Sato, N. Gallo, A.K. Sweetman, H. Lily, C.W. Armstrong, J. Bridger, Defining “serious harm” to the marine environment in the context of deep-seabed mining, *Mar. Policy* 74 (2016) 245–259.
- [38] H. Lily, A regional deep-sea minerals treaty for the Pacific Islands? *Mar. Policy* 70 (2016) 220–226.
- [39] L.M. Wedding, S.M. Reiter, C.R. Smith, K. Gjerde, J.N. Kittinger, A.M. Friedlander, S.D. Gaines, M.R. Clark, A.M. Thurnherr, S.M. Hardy, L.B. Crowder, Managing mining of the deep seabed. Contracts are being granted, but protections are lagging, *Science* 349 (6244) (2015) 144–145.
- [40] A. Anghie, *Imperialism, Sovereignty, and the Making of International Law*, Cambridge University Press, Cambridge, 2005.
- [41] E. Weber, Only a pawn in their games? Environmental (?) migration in Kiribati – past, present and future, *Die Erde J. Geogr. Soc. Berl.* 147 (2) (2016).
- [42] D. Chappell, Water nations: colonial bordering, exploitation and indigenous nation-building in Kiribati and Tuvalu, *Pac.-Asia Inq.* 7 (2016) 8–25.
- [43] IMF, Kiribati Article IV Consultation – Press Release; and Staff Report. IMF Country Report No. 17/386, International Monetary Fund, Washington D.C., 2017, 2017.
- [44] G.T. Cushman, *Guano and the Opening of the Pacific World: A Global Ecological History*, Cambridge University Press, New York, 2013.
- [45] R. Reiwaki, *Management of Marine Resources in Kiribati*, Institute of Pacific Studies, University of the South Pacific, Suva, Fiji, 1988.
- [46] K.M. Teaiwa, Our sea of phosphate: the diaspora of ocean island, in: G. Harvey, C.D. Thompson (Eds.), *Indigenous Diasporas and Dislocations*, Ashgate, Aldershot, 2005, pp. 169–192.
- [47] D.W. McIntyre, ‘We Cannot Now Apply the Brakes’, *Winding up the British Empire in the Pacific Islands*, Oxford University Press, Oxford, 2014, pp. 196–215.
- [48] Kiribati National Statistics Office, *Population and Housing Census*, 1 Ministry of Finance, Bairiki, 2015, p. 2016.
- [49] K. Uriam, *In their own words. History and society in Gilbertese oral tradition*, ANU J. Pac. Hist., Canberra, 1995.
- [50] K. Kaiser, Protecting respondent confidentiality in qualitative research, *Qual. Health Res.* 19 (11) (2009) 1632–1641.
- [51] J. Saldaña, *The Coding Manual for Qualitative Researchers*, 3rd ed., Sage, London, 2016.
- [52] Office of Te Berititenti, *National Framework for Climate Change and Climate Change Adaptation*, Government of Kiribati, South Tarawa, 2013.
- [53] Office of Te Berititenti, *Relocation* <<http://www.climate.gov.ki/category/action/relocation/>> (Accessed 1 October 2016), 2013.
- [54] L. Caramel, Besieged by the rising tides of climate change, Kiribati buys land in Fiji, *The Guardian*, 2014.
- [55] N. Mimura, L. Nurse, R.F. McLean, J. Agard, L. Briguglio, P. Lefale, R. Payet, G. Sem, *Small Islands, Climate Change 2007: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change*, Cambridge University Press, Cambridge, 2007, pp. 687–716.
- [56] L. Nurse, R.F. McLean, L. Briguglio, V. Duvat-Magnan, N. Pelesikoti, E. Tompkins, A.P. Webb, *Small Islands, Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part B: Regional Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change*, Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, 2014, pp. 1613–1654.
- [57] M.L. Robertson, C. Rubow, Engaged world-making: movements of sand, sea, and people at two Pacific Islands, in: K. Hastrup (Ed.), *Anthropology and Nature*, Routledge, London, 2014, pp. 62–78.
- [58] C.D. Woodroffe, Reef-island topography and the vulnerability of Atolls to sea-level rise, *Glob. Planet. Change* 62 (1–2) (2008) 77–96.
- [59] C.D. Woodroffe, J.M. Webster, Coral reefs and sea-level change, *Mar. Geol.* 352 (2014) 248–267.
- [60] H. Yamano, H. Kayanne, T. Yamaguchi, Y. Kuwahara, H. Yokoki, H. Shimazaki, M. Chikamori, Atoll Island vulnerability to flooding and inundation revealed by historical reconstruction: fongafale Islet, Funafuti Atoll, Tuvalu, *Glob. Planet. Change* 57 (3–4) (2007) 407–416.
- [61] A.P. Webb, P.S. Kench, The dynamic response of Reef Islands to sea-level rise: evidence from multi-decadal analysis of island change in the Central Pacific, *Glob. Planet. Change* 72 (3) (2010) 234–246.
- [62] M.R. Ford, P.S. Kench, Formation and adjustment of typhoon-impacted reef islands interpreted from remote imagery: Nadikdik Atoll, Marshall Islands, *Geomorphology* 214 (2014) 216–222.
- [63] Office of Te Berititenti, *Climate change Island Reports* <<http://www.climate.gov.ki/about-kiribati/island-reports-2012/>> (Accessed 20 August 2017), 2017.
- [64] S.R. Webber, *Adaptation Ecologies: Circuits of Climate Change Finance, Policy, and Science in the Pacific Islands* (Ph.D. dissertation), University of British Columbia, Vancouver, 2015.
- [65] S.R. Webber, Performative vulnerability: climate change adaptation policies and financing in Kiribati, *Environ. Plan. A* 45 (11) (2013) 2717–2733.
- [66] T. Teweiariki, *View on Kiribati politics* <<https://sites.google.com/site/eitametai/annoucement/teweiarikiteaeriewonkiribatipolitics>> (Accessed 5 August 2017), 2010.
- [67] R. Felli, N. Castree, Neoliberalising adaptation to environmental change: foresight or foreclosure? *Environ. Plan. A* 44 (1) (2012) 1–4.
- [68] Government of Kiribati, *Kiribati Joint Implementation Plan for Climate Change and Disaster Risk Management (KJIP)*, SPC, Suva, 2014.
- [69] Government of Kiribati, *Kiribati Development Plan 2016 – 19*, 2016. <http://www.mfed.gov.ki/sites/default/files/KiribatiDevelopmentPlan2016-19.pdf>. (Accessed 07.07. 2016).
- [70] G. Fry, *Recapturing the Spirit of 1971: Towards a New Regional Political Settlement in the Pacific*, State Society & Governance in Melanesia Discussion Paper, 2015.
- [71] G. Fry, C. Tarte, *The New Pacific Diplomacy*, ANU E Press, Canberra, 2015.
- [72] A. Tong, Statement by H.E. President Anote Tong, 69th UNGA, 26th September

- 2014, New York, 2014.
- [73] S. Teske, N. Florin, E. Dominish, D. Giurco, *Renewable Energy and Deep-sea mining: Supply, Demand and Scenarios*, UTS – Insitute for Sustainable Futures, Broadway, NSW, Australia, 2016.
- [74] ECORYS, *Blue Growth. Scenarios and drivers for Sustainable Growth from the Oceans, Seas and Coasts. Third Interim Report*, ECORYS Nederland BV, Rotterdam/Brussels, 2012.
- [75] E. Baker, Y. Beaudoin, *Deep Sea Minerals and the Green Economy*, 2 Secretariat of the Pacific Community, Suva, 2013.
- [76] M. Bourrel, A. Swaddling, V. Atalifo, A. Tawake, *Building in-country capacity and expertise to ensure good governance of the deep sea minerals industry within the Pacific region*, *Mar. Policy* (2017), <http://dx.doi.org/10.1016/j.marpol.2017.03.022> (In press).
- [77] SPC AGTD, *Pacific-ACP States Regional Legislative and Regulatory Framework for deep sea minerals exploration and exploitation/ prepared under the SPC-EU EDF10 Deep Sea Minerals Project*, Secretariat of the Pacific Community, Suva, 2012.
- [78] Conservation International, *Phoenix Islands Protected Area* <<http://www.conservation.org/projects/Pages/phoenix-islands-protected-area.aspx>> Accessed 2 November 2016), 2016.
- [79] E. King, *Kiribati president calls for moratorium on coal mines*. 13/08/2015 <<http://www.climatechangenews.com/2015/08/13/kiribati-president-calls-for-moratorium-on-coal-mines/>> (Accessed 9 June 2017), 2015.
- [80] Government of Kiribati, *Republic of Kiribati Seabed Minerals Act 2017*, South Tarawa, 2017.
- [81] B. Macdonald, *Cinderellas of the Empire. Towards a History of Kiribati and Tuvalu*, ANU Press, Canberra, 1982.
- [82] S. Firth, K. von Strokirch, *A nuclear pacific*, in: D. Denoon, M. Meleisea (Eds.), *The Cambridge History of the Pacific Islanders*, Cambridge University Press, Cambridge, 1997, pp. 324–358.
- [83] S.D. Donner, *Fantasy island*, *Sci. Am.* 312 (3) (2015) 56–63.
- [84] M. Laurice Jameró, M. Onuki, M. Esteban, X.K. Billones-Sensano, N. Tan, A. Nellas, H. Takagi, N.D. Thao, V.P. Valenzuela, *Small-island communities in the Philippines prefer local measures to relocation in response to sea-level rise*, *Nat. Clim. Change* 7 (8) (2017) 581–586.
- [85] N. Kuruppu, D. Liverman, *Mental preparation for climate adaptation: the role of cognition and culture in enhancing adaptive capacity of water management in Kiribati*, *Glob. Environ. Change* 21 (2) (2011) 657–669.
- [86] B.S. Thompson, A.J. Bladon, Z.H. Fahad, S. Mohsanin, H.J. Koldewey, *Evaluation of the ecological effectiveness and social appropriateness of fishing regulations in the Bangladesh Sundarbans using a new multi-disciplinary assessment framework*, *Fish. Res.* 183 (2016) 410–423.
- [87] A. Vanreusel, A. Hilario, P.A. Ribeiro, L. Menot, P.M. Arbizu, *Threatened by mining, polymetallic nodules are required to preserve abyssal epifauna*, *Sci. Rep.* 6 (26808) (2016) 1–6.
- [88] S. Gollner, S. Kaiser, L. Menzel, D.O.B. Jones, A. Brown, N.C. Mestre, D. van Oevelen, L. Menot, A. Colaco, M. Canals, D. Cuvelier, J.M. Durden, A. Gebruk, G.A. Egho, M. Haeckel, Y. Marcon, L. Mevenkamp, T. Morato, C.K. Pham, A. Purser, A. Sanchez-Vidal, A. Vanreusel, A. Vink, P. Martinez Arbizu, *Resilience of benthic deep-sea fauna to mining activities*, *Mar. Environ. Res.* 129 (2017) 76–101.