



# Does climate change influence people's migration decisions in Maldives?

Ilan Kelman<sup>1,2</sup>  · Justyna Orłowska<sup>3</sup> · Himani Upadhyay<sup>4,5</sup> · Robert Stojanov<sup>6,7</sup> · Christian Webersik<sup>8</sup> · Andrea C. Simonelli<sup>9,10</sup> · David Procházka<sup>11</sup> · Daniel Němec<sup>12</sup>

Received: 7 August 2018 / Accepted: 9 January 2019/Published online: 06 February 2019  
© The Author(s) 2019

## Abstract

The influence of climate change and perceptions of it on people's migration decisions has received significant prominence, especially for people living on low-lying islands. To contribute to this literature, this paper uses Maldives as a case study for exploring the research question: How does climate change influence or not influence people's migration decisions in Maldives? Previous work tends to start from a disciplinary climate change perspective, while this study combines migration, mobility, and island studies perspectives, within which climate change sits. As well, rather than focusing on the area around the capital, Malé, as with many previous studies, the 113 interviews here were conducted in eight islands across three atolls. The method was qualitative, semi-structured, face-to-face interviews using purposive sampling of ordinary people. Contrary to a view of islanders preparing to flee their islands as "climate change refugees", the interviewees provided nuanced and varied responses. They rarely identified the potential of future impacts due to climate change as influencing their migration-related decisions. When migration was considered, it was chiefly internal movement seeking a better standard of living via improved services, better living conditions, and more job opportunities. If migration related to potential climate change impacts might happen, then it was assumed to be in the future for decisions then. This lack of influence of climate change-related perceptions on Maldivians' migration decisions fits well within island mobilities studies, from which climate change perspectives could adopt wider contexts.

**Keywords** Climigration · Climate change environmental migration · Maldives · Migration · Mobility · Population dynamics

## 1 Introduction

Understanding how environmental changes affect or do not affect human migration and settlement patterns has a rich scientific history (Cebula and Vedder 1973; El-Hinnawi 1985; Petersen 1958; Van Andel 1989), with the influences of contemporary climate change earning

---

✉ Ilan Kelman  
ilan\_kelman@hotmail.com

particular prominence (Baldwin and Fornalé 2017; Brzoska and Fröhlich 2016; McLeman and Gemenne 2018). Many studies explore migration as a consequence of failing to adapt to climate change or as a mode of climate change adaptation (Behrman and Kent 2018; Felli and Castree 2012; Foresight 2011; Palutikof et al. 2013; Stojanov 2014; Withagen 2014), although choosing or being forced not to migrate (i.e. to remain where one is) due to climate change can also represent either a failure to adapt or climate change adaptation (Kelman et al. 2015).

When trying to determine why people migrate or not, empirical studies demonstrate the challenges in decoupling climate change from other environmental or non-environmental influences (Baldwin et al. 2014; Black et al. 2013; Gentle et al. 2018; Obokata et al. 2014; Simonelli 2015). As such, determining cause and effect is not straightforward, leading many authors to question climate change and migration links (Connell 2016; Gemenne 2011; Hartmann 2010; Nicholson 2014; Stal and Warner 2009). Studies asking islanders about their views of climate change, its (potential) impacts, and its (potential) consequences often tend to highlight a climate change perspective or participation in research is achieved by starting with climate change (e.g. for Tuvalu, see Paton and Fairbairn-Dunlop 2010). Gaining further insights into local viewpoints and interests on migration and climate change links, without presupposing that climate change or its impacts would be of concern, would assist in formulating policy responses to the perceptions and realities of climate change influencing migration and non-migration (Baldwin 2013; Featherstone 2013; McLeman and Gemenne 2018).

To contribute to this literature, this paper focuses on one of the most iconised locations with respect to climate change migration: low-lying islands, in this case, the Indian Ocean archipelago of Maldives. The research question is: how does climate change influence or not influence people's migration decisions in Maldives? Prior literature on Maldives focuses on the area around the capital, whereas this study also includes other atolls. Previous work also tends to start from a disciplinary climate change perspective, while this study combines migration, mobility, and island studies approaches, within which climate change sits.

The next section provides the theoretical summary underlying this study. Then, the case study and method are described followed by results and discussion. The conclusions answer the research question and indicate further directions.

## 2 Theoretical summary

Mobilities literature has long accepted two fundamental theoretical baselines (e.g. Desbarats 1983; Petersen 1958): (i) environmental trends and changes can stimulate both migration and non-migration and (ii) migration and non-migration are part of wider environmental and social dynamics. These baselines are now being re-articulated in climate change and migration literature (e.g. Foresight 2011; McLeman and Gemenne 2018). They have also long been part of the understanding of islander population movements, for which environmental changes (climatic and non-climatic) have always been one factor amongst many inducing movements or non-movement (Guan and McElroy 2012; King and Connell 1999). A climate change framing has taken island population dynamics discussion from “movement” or “mobility” to “migration” or “displacement”, often with an implicit assumption that climate change has or will have a linear cause and effect on out-migration from low-lying island homes.

Aside from islanders having long undergone different scales of population movements for combinations of forced and unforced reasons (Kelman et al. 2015), three other reasons query the climate change framing. First, the geomorphological changes of low-lying islands under

climate change vary and it is not clear that all these islands will disappear due to sea-level rise (Rankey 2011; Kench et al. 2018), although freshwater supplies and coral reefs are likely to be significantly threatened which could make living on the islands difficult.

Second, out-migration due to environmental changes is part of island population dynamics, but so are internal movements, circular migration, and in-migration (Guan and McElroy 2012; King and Connell 1999). Circular migration (also called migration circulation) refers to the temporary movement for studying or working, often circling around between home and host or hosts. Maldives sends and receives circular migrants. Top destination countries for Maldivians are Australia, India, and New Zealand and top countries sending migrants to Maldives are Bangladesh, India, and Sri Lanka (UNICEF 2018). Around the world, many advantages of circular migration are suggested. Migrants return with new skills, financial capital, and knowledge, thereby contributing to their home and their society, although many do not return which has advantages in creating a diaspora, potentially sending remittances, and relieving population and resource pressures at home alongside disadvantages in terms of a potential brain drain (Constant et al. 2013; De Haas 2005; Skeldon 2012). The complexities of circular and other forms of migration, especially for islanders (Connell and Conway 2000; Guan and McElroy 2012), meld environmental and social reasons, indicating difficulties at times in extracting a clear climate change signal within migration patterns (Connell 2016; Hartmann 2010; Nicholson 2014).

The third reason challenging the climate change framing is that islanders have choices, resources, and abilities (Baldacchino 2018). They are not passive marionettes, responding to push-pull factors of mobility/migration or passively awaiting climate change impacts or forebodings thereof to force a decision. Instead, islanders present their own perspectives, perceptions, and interests on population dynamics (e.g. Peruma 2018 for Vanuatu).

These statements apply to Maldivians who have long been aware of the ever-changing nature of their environment (Romero-Ffás 2003). Maldivian kings used to describe their islands through an expression meaning “our appearing and disappearing kingdom” (Orłowska 2015, 157). Coral atolls are in continual flux from natural and anthropogenic influences, always changing the inhabitants’ living conditions (Comte and Pendleton 2018). Consequently, Maldivians have always been highly mobile as part of their livelihoods and lifestyles (Orłowska 2015), accustomed to abandoning their home islands when needed to move to another place temporarily. Maldivians state that their neighbours have called them “nomads of the sea” (Orłowska 2015, 157).

### 3 Case study

Today, Maldives is a sovereign state comprising nearly 1200 coral islands across 19 administrative (and 26 natural) atolls over 90,000 km<sup>2</sup> of the Indian Ocean. Approximately 200 islands are inhabited. Elevation above sea level ranges from 0.0–2.4 m and most islands are 1–2 km<sup>2</sup> in area. The largest settlement is the capital Malé, near the country’s geographic centre within Kaafu Atoll.

Malé is home to more than one third of Maldives’ population of 338,434, plus approximately 60,000 resident foreigners live around the country (National Bureau of Statistics 2015). Uneven population distribution around the atolls, migration from outer islands to the capital city area, high population densities on some islands, and rapid population growth (sometimes connected with in-migration), especially in the capital, have been causing difficulties including freshwater availability, solid waste disposal, and sewage management. In 1989, Maldives’ population density was 650 km<sup>2</sup> (Pernetta and Sestini 1989), rising to 1128 km<sup>2</sup> by 2012 with 43.5% of the population now concentrated in urban areas (National Bureau of Statistics 2015; UNSD 2015). Numerous land

reclamation projects together with coastal infrastructure construction—such as sea walls, breakwaters, and harbours—have provided more living space and more temporarily stable islands, but much is completed without fully investigating patterns of erosion, deposition, waves, and currents.

A long-standing central government strategy to try to deal with these demographic challenges is population consolidation. To provide apparently more efficient health, education, and social services, the government has aimed to move the smallest island populations to larger islands and island clusters (Kothari 2014; Simonelli 2015; Sovacool 2012a). In many cases, the plan involves land reclamation, establishing artificial islands such as Hulhumalé near the capital and building bridges such as for Baa Atoll. Recently, the government has been using threats of climate change impacts as a principal reason to push for population consolidation (Kothari 2014; Sovacool 2012a).

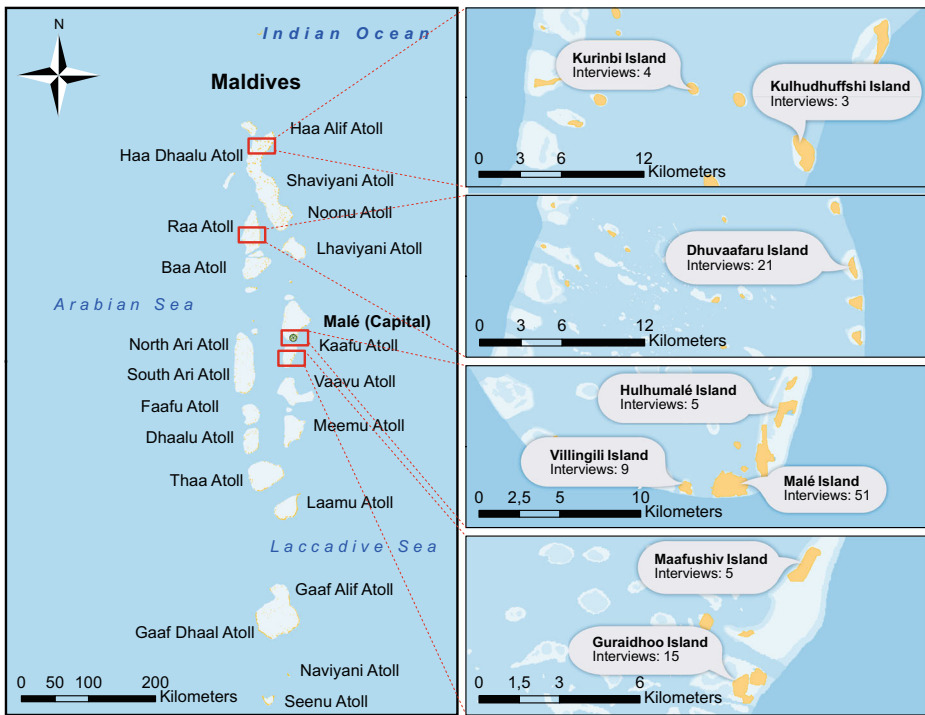
Maldives' economy has traditionally been based on fishing, but current livelihoods are powered mostly by tourism (Statistical Yearbook of Maldives 2015). The country has limited arable land and freshwater, with the latter made more scarce when the 26 December 2004 tsunami salinated the few freshwater island lakes (*kulhi*). Maldives is officially a Sunni Muslim country, as required by the constitution (Hussain 2008). Freedom of speech, especially in religious matters, remains limited, despite democratic reforms which started around 2004 and have had a rocky implementation since then.

In 2004, a multi-party system was introduced which led, in 2008, to dissident Mohamed Nasheed being elected President over Maumoon Abdul Gayoom who had run an authoritarian dictatorship for 30 years. Nasheed made climate change his main issue on the world stage, contributing to the image of Maldives as being small and vulnerable, with its existence threatened by climate change. He even indicated that tourism revenues should be placed in a special fund for purchasing land so that Maldivians could migrate as sea-level rise inundates their country, although neither he nor his successors followed through. Nasheed was deposed in 2012 amid accusations of being anti-democratic, with election violence plaguing the country ever since and subsequent leaders giving climate change a lower profile (Arnall and Kothari 2015; Hirsch 2015).

Given the politics surrounding Maldives' political stance on climate change and the mobile nature of Maldivians, this case study is important within climate change and migration investigations for understanding the thoughts and perceptions of islanders about links between migration and climate change. These occur within the context of mean global sea-level rising several millimetres per year (Kench et al. 2018; Nerem and Fasullo 2018), yielding clear potential for concerns about actual or assumed climate change impacts.

## 4 Method

Qualitative, semi-structured, face-to-face interviews were conducted in Maldives in 2013 (Fig. 1 and Table 1) using a purposive sampling of ordinary people. Location choice was made primarily based on accessibility and interest of the community in participating along with snowball sampling via recommendations from initial interviewees of locations to consider. English is widely spoken in Maldives, so it was the language of many of the interviews, especially with the younger interviewees and in Malé. Away from the capital and with older interviewees, interviews were conducted mainly in the national language, Dhivehi, using interpreters. On many occasions, interviewing someone meant that the family was present and joined in, leading to a diversity of views, sometimes in both languages. Interviews lasted 30–90 min each and were either recorded or notes were taken followed by coding of common themes. Interviewees gave informed consent and were guaranteed anonymity and confidentiality.



**Fig. 1** Locations and numbers of interviews

A total of 113 interviews, comprising 50 men and 63 women, were conducted in eight islands across three atolls. Because of Maldivians' high mobility around their country, the islands listed are the islands where the interviewees live now, not their islands of origin—which for some interviewees would also be more than one island depending on their parents, their birthplace, and where they grew up. Dhuvaafaru is particularly interesting, because it was uninhabited in the modern era (although settled before) until 2005. When the 26 December 2004 tsunami inundated much of Maldives, Kandholhudhoo was almost completely destroyed, so the community was rebuilt on Dhuvaafaru, one of the largest post-tsunami reconstruction projects in Maldives.

The interview structure varied according to each interviewee to ensure that interviewees could direct the discussion according to their own interests and in their own words. Nonetheless, the questions and discussion for all interviews were based on two themes to ensure that the research question would be answered. The first theme is: are you considering moving from your current home? Why or why not? If climate and environmental reasons were not raised during the discussion of this theme, then the second theme was raised explicitly: would climate change and its impacts influence your decision to move? Why or why not?

## 5 Results

### 5.1 Patterns and reasons for moving

Only 18 interviewees (12 men and 6 women) specifically stated that they were considering moving now. Their reasons were seeking a better standard of living via improved services,

**Table 1** List of interviewees (the main interviewee, not including the family)

Number	Gender	Reported age <sup>a</sup>	Island and atollof interview	Reported jobs
1	Male	Young adult	Dhuvaafaru (Raa)	Officer in a government ministry
2	Female	Young adult	Dhuvaafaru (Raa)	Shop owner
3	Male	Young adult	Dhuvaafaru (Raa)	Unemployed
4	Male	Young adult	Dhuvaafaru (Raa)	Diving instructor in a resort
5	Female	Young adult	Dhuvaafaru (Raa)	Teacher's assistant
6	Female	Middle aged	Dhuvaafaru (Raa)	Homemaker
7	Female	Elderly	Dhuvaafaru (Raa)	Homemaker
8	Male	Middle aged	Dhuvaafaru (Raa)	Fisher
9	Female	Middle aged	Dhuvaafaru (Raa)	Homemaker
10	Male	Elderly	Dhuvaafaru (Raa)	Fisher
11	Female	Elderly	Dhuvaafaru (Raa)	Homemaker
12	Female	Young adult	Dhuvaafaru (Raa)	Unemployed
13	Female	Young adult	Dhuvaafaru (Raa)	Homemaker
14	Female	Middle aged	Dhuvaafaru (Raa)	Homemaker
15	Female	Middle aged	Dhuvaafaru (Raa)	Homemaker
16	Female	Elderly	Dhuvaafaru (Raa)	Homemaker
17	Female	Young adult	Dhuvaafaru (Raa)	Homemaker
18	Male	Elderly	Dhuvaafaru (Raa)	Retired sailor
19	Male	Elderly	Dhuvaafaru (Raa)	Security guard
20	Female	Middle aged	Dhuvaafaru (Raa)	Homemaker
21	Female	Young adult	Dhuvaafaru (Raa)	Homemaker
22	Male	Young adult	Guraidhoo (Kaafu)	Security guard
23	Male	Young adult	Guraidhoo (Kaafu)	Unemployed
24	Male	Young adult	Guraidhoo (Kaafu)	Tour guide
25	Female	Middle aged	Guraidhoo (Kaafu)	Civil servant
26	Male	Middle aged	Guraidhoo (Kaafu)	Retired island chief and civil servant
27	Female	Middle aged	Guraidhoo (Kaafu)	Resort worker
28	Female	Middle aged	Guraidhoo (Kaafu)	Homemaker
29	Male	Elderly	Guraidhoo (Kaafu)	Retired civil servant
30	Female	Elderly	Guraidhoo (Kaafu)	Homemaker
31	Female	Elderly	Guraidhoo (Kaafu)	Homemaker
32	Female	Young adult	Guraidhoo (Kaafu)	University student
33	Female	Middle aged	Guraidhoo (Kaafu)	Homemaker
34	Male	Young adult	Guraidhoo (Kaafu)	Island councillor
35	Male	Young adult	Guraidhoo (Kaafu)	Resort worker
36	Male	Young adult	Guraidhoo (Kaafu)	Resort worker
37	Male	Young adult	Hulhumalé (Kaafu)	Business operator
38	Male	Young adult	Hulhumalé (Kaafu)	Airline staff
39	Female	Young adult	Hulhumalé (Kaafu)	Service industry
40	Female	Young adult	Hulhumalé (Kaafu)	Faculty staff
41	Male	Young adult	Hulhumalé (Kaafu)	Government officer and graduate student
42	Female	Young adult	Kulhudhuffushi (Haa Dhaal)	Babysitter
43	Female	Young adult	Kulhudhuffushi (Haa Dhaal)	Nurse
44	Female	Young adult	Kulhudhuffushi (Haa Dhaal)	Red Crescent worker
45	Male	Young adult	Kurinbi (Haa Dhaal)	Teacher
46	Female	Elderly	Kurinbi (Haa Dhaal)	Homemaker
47	Male	Elderly	Kurinbi (Haa Dhaal)	Carpenter
48	Female	Young adult	Kurinbi (Haa Dhaal)	Homemaker
49	Female	Young adult	Maafushi (Kaafu)	Travel industry employee
50	Male	Young adult	Maafushi (Kaafu)	Guest house staff
51	Male	Young adult	Maafushi (Kaafu)	Unemployed
52	Female	Young adult	Maafushi (Kaafu)	Guest house staff
53	Male	Middle aged	Maafushi (Kaafu)	Prison guard and guesthouse owner
54	Male	Young adult	Malé (Kaafu)	University lecturer
55	Male	Young adult	Malé (Kaafu)	Environmental consultant
56	Female	Young adult	Malé (Kaafu)	Service industry worker
57	Female	Young adult	Malé (Kaafu)	Officer in a government ministry
58	Male	Young adult	Malé (Kaafu)	Taxi driver

**Table 1** (continued)

Number	Gender	Reported age <sup>a</sup>	Island and atollof interview	Reported jobs
59	Male	Young adult	Malé (Kaafu)	University student
60	Female	Young adult	Malé (Kaafu)	University student
61	Male	Young adult	Malé (Kaafu)	University student
62	Female	Young adult	Malé (Kaafu)	University student
63	Male	Young adult	Malé (Kaafu)	Trader
64	Male	Young adult	Malé (Kaafu)	Police officer
65	Male	Young adult	Malé (Kaafu)	Police officer
66	Male	Middle aged	Malé (Kaafu)	Working, but job not reported
67	Female	Middle aged	Malé (Kaafu)	Nurse
68	Male	Middle aged	Malé (Kaafu)	Logistics department crew
69	Male	Young adult	Malé (Kaafu)	Musician
70	Female	Young adult	Malé (Kaafu)	Service industry worker
71	Male	Young adult	Malé (Kaafu)	Working, but job not reported
72	Male	Young adult	Malé (Kaafu)	Teacher
73	Female	Young adult	Malé (Kaafu)	Teacher
74	Male	Young adult	Malé (Kaafu)	Working, but job not reported
75	Male	Young adult	Malé (Kaafu)	Teacher
76	Male	Young adult	Malé (Kaafu)	Working, but job not reported
77	Male	Young adult	Malé (Kaafu)	Worker
78	Female	Middle aged	Malé (Kaafu)	Working, but job not reported
79	Female	Middle aged	Malé (Kaafu)	Nurse
80	Female	Young adult	Malé (Kaafu)	Working, but job not reported
81	Female	Young adult	Malé (Kaafu)	Working, but job not reported
82	Female	Young adult	Malé (Kaafu)	Teacher
83	Male	Young adult	Malé (Kaafu)	University lecturer
84	Female	Young adult	Malé (Kaafu)	University student
85	Female	Young adult	Malé (Kaafu)	University student
86	Female	Young adult	Malé (Kaafu)	University student
87	Female	Young adult	Malé (Kaafu)	University student
88	Female	Young adult	Malé (Kaafu)	University student
89	Female	Young adult	Malé (Kaafu)	University student
90	Female	Young adult	Malé (Kaafu)	University Student
91	Female	Young adult	Malé (Kaafu)	Faculty staff
92	Female	Middle aged	Malé (Kaafu)	University lecturer
93	Female	Young adult	Malé (Kaafu)	University student
94	Female	Young adult	Malé (Kaafu)	University student and officer in a government ministry
95	Male	Young adult	Malé (Kaafu)	University student
96	Male	Young adult	Malé (Kaafu)	University lecturer
97	Female	Young adult	Malé (Kaafu)	University student
98	Female	Young adult	Malé (Kaafu)	Manager in tuna business
99	Male	Young adult	Malé (Kaafu)	Graphic designer
100	Male	Middle aged	Malé (Kaafu)	Graduate student
101	Male	Young adult	Malé (Kaafu)	Businessman
102	Female	Young adult	Malé (Kaafu)	President's office staff
103	Female	Young adult	Malé (Kaafu)	Officer in a government ministry
104	Female	Young adult	Malé (Kaafu)	Unemployed
105	Female	Young adult	Villingili (Kaafu)	Computer specialist and business operator
106	Male	Young adult	Villingili (Kaafu)	Director of NGO
107	Female	Young adult	Villingili (Kaafu)	Project manager
108	Female	Young adult	Villingili (Kaafu)	Public relations manager in marketing
109	Female	Middle aged	Villingili (Kaafu)	Gardener
110	Male	Young adult	Villingili (Kaafu)	Unemployed
111	Female	Young adult	Villingili (Kaafu)	Civil servant
112	Male	Young adult	Villingili (Kaafu)	Working, but job not reported
113	Male	Young adult	Villingili (Kaafu)	Unemployed

<sup>a</sup> Young adult = 18–35 years; middle aged = 36–59 years; and elderly = 60+ years

better living conditions, and more job opportunities. Otherwise, interviewees might reluctantly consider moving, if they must, in order to achieve a better life.

In terms of where to move to, three main patterns were revealed. First, and common across the interviewees outside of an atoll centre, is moving from outer islands to more central ones, typically to atoll capitals.

Next, and common amongst interviewees outside of the capital city area, is the highly preferred destination of Malé atoll, including the constructed islands such as Hulhumalé. Malé is a popular and often-presumed final destination for the majority of Maldivians who move internally. It is the island with the country's most services, such as for healthcare and schools, including higher education. One result is overpopulation, lack of space, pollution, and difficult living conditions in the capital, leading interviewees such as #112 to comment that "I would leave due to housing difficulties in Malé" to go back to smaller communities, i.e. evidence of circular migration.

The third pattern is leaving Maldives to move abroad, named by 35 interviewees (21 men and 14 women) across interview locations, often for jobs or education, but typically with the expectation of eventually returning, again highlighting circular migration. Interviewees #73 and #106 cited moving overseas due to political instability and growing radical Islamism, leading to distrust of the national government. Interview #37 stated that, even though he "loves" his country, "if I think about migration, I would do it because of government restriction and lack of religious freedom". Some interviewees were even blunter, such as #110 stating he would move because "there is nothing to do in this country".

Yet, 69 interviewees (27 men and 42 women) indicated that they would really prefer not to move outside their country at all. Commitment to land, family, and culture was cited, especially in terms of creating and retaining their own, unique identity. For instance, interviewee #65 said, "Maldives is the best place to live in and I find peace here. And the environment is great". Interviewee #67 explained her reluctance to leave her country: "This is where I grew up and it would be more expensive to live elsewhere". Interviewee #78 expressed concern about migrants' reception in other countries, noting "I have doubts on the acceptance of Maldivians into other countries; don't think any foreign country would voluntarily accept this. Modern nation states are about exclusion of the other".

Another dimension of how interviewees discussed their movement refers to time. Many Maldivians temporarily move islands for work, education, or healthcare, another example of circular migration. In many fishing communities, men leave for the weekdays, returning home for the Friday-Saturday weekends, which is weekly back and forth or circular migration. Meanwhile, workers or students far from their home islands frequently live with relatives, returning home for holidays only, a few times per year.

## 5.2 Climate change perceptions as a potential trigger for migration

Perceptions of impacts from neither climate change nor environmental change were especially highlighted as a reason to move internally or overseas, temporarily or permanently. Thirty-four interviewees (19 men and 15 women) indicated or hinted at a likelihood of leaving Maldives due to sea-level rise (with interviewees #6, #18, #22, #29, #30, #32, #37, #64, #74, #108, #109, and #111 mentioning it most prominently) while #45 explained that environmental reasons more generally could possibly trigger a decision to move. A conflation of topics occurred in that some interviewees interpreted "environmental reasons" as referring to wider contexts, so possibly including climate change impacts but within general living conditions, including the availability of property and services.



Forty-four interviewees (24 men and 20 women) believed that Maldives has to adapt to climate change impacts, with interviewee #80 illustrating by stating “In case of problems, we should solve them here instead of moving”, although it was not always as clear-cut whether or not migration and adaptation were linked or conflated by the interviewees. Interviewee #85 epitomised concerns about leaving Maldives due to potential future climate change impacts, stating “I can’t imagine leaving and never coming back”. Interviewee #55 represented concerns about assimilation in other countries: “Are we willing actually to lose our culture, nation, language, tradition, history? The Maldivian language is used by 300,000 people...if we emigrate due to sea-level rise, we lose our nation, our history”.

Interviewees #14, #19, #22, #25, #46, and #79 were especially adamant that out-migration would be the last resort and if it did happen, then they would prefer to move with their community and family, not as individuals. Interviewee #6 explained, “Yes, I will go where the government tells me to go, but would prefer that the whole community moves together” and interviewee #32 asserted, “If I have to, then I want to move with my family”. The clear preference was to continue living in their houses with their communities in Maldives, irrespective of potential future climate change impacts.

Where climate change and its impacts were noted with respect to moving, a common tone was to wait and see, with decisions being made later. Interviewee #109 believes that climate change impacts “might not happen in my life time”; #37 expressed, “It’s very long time in future”; and #64 stated, “Our generation will survive; don’t know about the future”. For migration due to climate change impacts or perceptions of them, Interviewee #60 noted, “It could be possible in places with vast environment problems, but I personally don’t think it could be a reason for migration in Maldives”. Interviewee #59 spoke from faith: “I believe the climate can have destructive effects on our environment, but still, I think the universe has its way of balance and I do not believe that sea-level rise could be a threat to our existence”. Interviewee #76 placed expectations on the government, explaining that “The government should sustain laws which are environmentally friendly, which should protect mother nature, so in my view we don’t have to move if we get responsible and start taking action on our part”.

## 6 Discussion

The interviewees gave highly nuanced and varied responses, which should be expected given the heterogeneity of all communities (Titz et al. 2018), but which is sometimes subsumed by a discourse of drowning/disappearing islands leading to the islanders desperately preparing to become “climate change refugees” (see critique and analysis by, amongst others, Bettini 2013, Farbotko 2005, Hartmann 2010; Nicholson 2014). Migration is of interest to some Maldivians, but neither the potential future climate change impacts nor the desire to leave Maldives represents an overriding factor. Instead, the interviewees focus on immediate, day-to-day interests such as education, jobs, and livelihoods while seeking to retain the familiarity of home and family. These results corroborate long-standing findings from the migration and mobilities literature (Fiddian-Qasmiyeh et al. 2016; Pieterse 2000).

The nuanced, varied, and non-homogeneous responses were also seen when comparing men and women. The literature from island studies typically suggests that women tend to have greater concerns for the environment than men (Clarke and Barker 2012; Hauzer et al. 2012; Sulu et al. 2015), although wider differences might potentially be masked by women not wanting to articulate an opinion different from their husband, especially with

their husband in the room, which would also factor into the interviews conducted for this research. Here, with the focus on migration, patterns emerged that more men than women would consider migrating and more men than women indicated a need to deal with the changing environment by migrating.

In their responses to the interview questions, women much more than men mentioned migration due to a desire for better facilities, such as healthcare and schools. Because this study highlighted migration, it could be that interviewees were framing their social and environmental reasoning within the context of moving or not, rather than necessarily separating the topics and analysing the cause and effect. That is, perhaps more men identify sea-level rise or perceptions of it as possibly leading to migration because they want to migrate and are seeking reasons for doing so. Certainly, the interviewees did not provide much nuancing along the lines of academic discussions on migration as adaptation compared to migration as a failure to adapt (e.g. Palutikof et al. 2013; Stojanov 2014).

Gender-differentiated migration interests and patterns are frequently identified in the literature, but case studies including for islands present a variety of results when comparing men and women including with respect to in-migration, out-migration, and circular migration (Chant 1992; Donato et al. 2006; Truong et al. 2016). The work here about Maldives intersects the gender-differentiated environmental perception literature and the gender-differentiated migration literature by signalling that, at least for Maldives, any increased awareness of or concern about the changing environment which women might have compared to men does not seem to be translating immediately into augmented migration interests for women compared to men.

This point of migration interests not necessarily being deeply linked to experienced or perceived climate change considerations, even where climate change impacts were mentioned by interviewees, is further supported by the interviewees' preference for internal migration. All Maldivian land is low-lying atolls, so if sea-level rise or climate change adaptation were a strong impetus towards migration, then the only option would be to other countries. Conversely, the challenge of services and opportunities across Maldives has been recognised for decades, being used as a baseline for the country's long-standing policy of consolidating the population on a handful of islands (Kothari 2014; Simonelli 2015; Sovacool 2012a). More recently, the Maldivian government has shifted towards trying to get at least a primary school and a healthcare centre on each island. In practice, many of these facilities are small and ill-equipped, so they play only a marginal role (Orłowska 2015). High-quality education and specialist medical tests still require travel to atoll capitals or, preferably, to *Malé*.

With regard to climate change, little impetus emerged for moving due to its impacts or potential future impacts, even though this viewpoint might change in the future if and when impacts become more pronounced. The priority was staying in Maldives while other environment-related concerns were considered in tandem with climate change. Even when climate change was accepted by the interviewees as happening with major impacts, especially sea-level rise, permanent departure from Maldives was not a significant or expected option, seemingly because the physical aspects of climate change have not impacted daily life. Such findings fit into the literature's general conclusions from island studies. Bedford and Hugo (2012), Guan and McElroy (2012), King and Connell (1999), and Nunn and Carson (2015) exemplify previous work, investigating how and why many different islanders choose to move or not. Environmental reasons, including potential future climate change impacts, are occasionally pertinent, but mainly in the context of social factors, such as the connection between environmental conditions and livelihoods, identity, culture, family, poverty, and education.

The results here from Maldives further corroborate studies from other island case studies, most notably Tuvalu (Farbotko and Lazrus 2012; McCubbin et al. 2015; Mortreux and Barnett 2009), the country which perhaps is most analogous to Maldives. These studies find that Tuvaluans are rarely concerned about climate change impacts and would not expect to make migration decisions based on potential future climate change impacts. Instead, factors such as culture, identity, family, jobs, education, and livelihoods are the influences on mobility decisions, exactly the same as found for Maldives here and by others (Arnall and Kothari 2015; Hirsch 2015; Kothari 2014; Simonelli 2015; Sovacool 2012a, 2012b).

Yet, Tuvalu and Maldives are held up by many researchers, media institutions, and politicians as being icons of climate change and possible sources of “climate refugees” or “climate change refugees” (e.g. see the analysis in Farbotko 2005). A disconnect occurs between the external view of what the islanders should be worried about and what the islanders think they should be doing based on their own interests and knowledge. In particular, the “refugees” and “forced migration” trope highlights the supposed situation of movement being involuntary and leaving one’s country of origin directly because of impacts from climate change. This assumption contrasts with the interviewees expecting and presuming that they choose how and when they migrate and that they will have destination choices, including remaining within their country—similar to the findings in Vanuatu (Peruma 2018).

All assumptions portray some realism. Low-lying islands face many climate change impacts—including sea-level rise, freshwater availability, invasive alien species, dying coral reefs, and shifting fisheries—which have the potential for entailing island-wide or country-wide population movements (e.g. Yamamoto and Esteban 2014). No certainties exist regarding climate change impacts on, or the need to evacuate from, countries such as Maldives, Tuvalu, or others experiencing similar circumstances (Rankey 2011; Kench et al. 2018). Migration might be entirely forced, might be entirely a choice, or (as is typical for most migration scenarios; see Fiddian-Qasimiyeh et al. 2016) might result from an intertwining of perceived involuntary and voluntary circumstances with multiple players and inputs into the ultimate decision (Cebula and Vedder 1973; Desbarats 1983; Felli and Castree 2012; Foresight 2011; Petersen 1958).

Meanwhile, other major environmental changes occur to which some populations are able to adapt, as illustrated when some Maldivians abandoned their original islands after the 2004 tsunami to construct the new settlement on Dhuvaafaru (Sovacool 2012a). Not all such changes are necessarily survivable in situ, such as if sea-level rise, erosion, or a tsunami does inundate an island entirely. Nevertheless, migration, mobility, and island studies demonstrate how multiple social and technical approaches exist to support islanders in thriving on ostensibly climate change threatened communities (e.g. Yamamoto and Esteban 2014). To do so, resources must be provided and cultural adjustments made, neither action of which might be deemed to be desirable.

## 7 Conclusions

A high likelihood exists that Maldivian people and settlements will experience significant climate change impacts with the strong potential of population movements being a prominent option. Any such movements will occur alongside other typical reasons for moving, including health, education, livelihoods, adventure and non-climate change-related environmental changes. Maldivians currently do not prioritise future potential impacts from climate change

in their movement-related decision-making, while nonetheless exploring many reasons for moving. Thus, this paper's research question is answered: at the moment, the potential for future impacts due to climate change does not provide much influence on people's migration decisions in Maldives.

Policy- and decision-makers inside and outside Maldives could consider whether or not responsibility ought to be taken to explain to Maldivians the impacts which are expected from climate change, with many unknowns and uncertainties. As climate change impacts presumably become increasingly perceived and felt more locally, they could have longer term and larger scale implications for movement-related decisions. Yet, Maldivians now have access to media including the Internet as well as friends and relatives overseas. All this information would be available for analysis, interpretation, and decision-making, should Maldivians choose to access and use it. Moreover, some Maldivians would not wish to move irrespective of environmental changes. Thus, perhaps the main responsibility of policy- and decision-makers might be to make material available through multiple conduits rather than pushing information, recommendations, and decisions onto the people, often under the presumption that external or élite "experts" inevitably know better than the people.

Consequently, the results here—from across Maldives and without using climate change as a starting point, both of which are approaches rarely found in the literature—fit well within the frame of previous literature on islander mobilities and cultural interpretations thereof. This literature, supported by Maldivians' viewpoints in this study, challenges much of the research which uses climate change as a starting point for examining islander population dynamics. Climate change studies have locked in some discourse as out-migration being a direct and expected consequence of climate change impacts, but the perceptions of those ostensibly affected directly are much more nuanced. A moral question thus emerges. If the climate change perspective, especially from externals and élites, proves correct that climate change impacts will directly force migration with no other option, should efforts be made to change Maldivians' perceptions and actions—and, if so, by whom and how?

**Open Access** This article is distributed under the terms of the Creative Commons Attribution 4.0 International License (<http://creativecommons.org/licenses/by/4.0/>), which permits unrestricted use, distribution, and reproduction in any medium, provided you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons license, and indicate if changes were made.

**Publisher's note** Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

## References

- Arnall A, Kothari U (2015) Challenging climate change and migration discourse: different understandings of timescale and temporality in and temporality in the Maldives. *Glob Env Change* 31:199–206
- Baldacchino G (ed) (2018) *The international handbook of island studies: a world of islands*. Routledge, Abingdon
- Baldwin WA (2013) Racialisation and the figure of the climate-change migrant. *Env Plan A* 45:1474–1490
- Baldwin WA, Fornalé E (2017) Adaptive migration: pluralising the debate on climate change and migration. *Geogr J* 183:322–328
- Baldwin WA, Methmann C, Rothe D (2014) Securitizing 'climate refugees' the futurology of climate-induced migration. *Crit Stud Sec* 2:121–130
- Bedford R, Hugo G (2012) *Population movement in the Pacific: a perspective on future prospects*. Department of Labour, Wellington

- Behrman S, Kent A (2018) *Climate refugees: beyond the legal impasse?* Routledge, Abingdon
- Bettini G (2013) Climate barbarians at the gate? A critique of apocalyptic narratives on 'climate refugees'. *Geoforum* 45:63–72
- Black R, Kniveton D, Schmidt-Verkerk K (2013) Migration and climate change: toward an integrated assessment of sensitivity. In: Faist T, Schade J (eds) *Disentangling migration and climate change*. Springer, London, pp 29–53
- Brzoska M, Fröhlich C (2016) Climate change, migration and violent conflict: vulnerabilities, pathways and adaptation strategies. *Mig Dev* 5:90–210
- Cebula RJ, Vedder RK (1973) A note on migration, economic opportunity, and the quality of life. *J Reg Sci* 13: 205–211
- Chant S (ed) (1992) *Gender and migration in developing countries*. Belhaven, London
- Clarke J, Barker D (2012) Sugar, land and female livelihood in transition in St. Kitts. *Dialogue Universalisme* 3: <https://www.emporia.edu/~cbrown/dnue/archives/vol03.no01.2012/documents/Clarke%20and%20Barker.pdf>
- Comte A, Pendleton LH (2018) Management strategies for coral reefs and people under global environmental change: 25 years of scientific research. *J Env Manag* 209:462–474
- Connell J (2016) Last days in the Carteret Islands? Climate change, livelihoods and migration on coral atolls. *Asia Pac View* 5:3–15
- Connell J, Conway D (2000) Migration and remittances in island microstates: a comparative perspective on the South Pacific and the Caribbean. *Int J Urban Reg Res* 24:52–78
- Constant AF, Nottmeyer O, Zimmermann KF (2013) The economics of circular migration. In: Constant AF, Zimmermann KF (eds) *International handbook on the economics of migration*. Edward Elgar, Cheltenham, pp 55–74
- De Haas H (2005) International migration, remittances and development: myths and facts. *Third World Q* 26: 1269–1284
- Desbarats JM (1983) Constrained choice and migration. *Geog Ann B* 65:11–22
- Donato KM, Gabaccia D, Holdaway J, Manalansan M, Pessar PR (2006) A glass half full? Gender in migration studies. *Int Migr Rev* 40(1):3–26
- El-Hinnawi E (1985) *Environmental refugees*. United Nations Environment Programme, Nairobi
- Farbotko C (2005) Tuvalu and climate change: constructions of environmental displacement in the Sydney morning herald. *Geog Ann B* 87:279–293
- Farbotko C, Lazrus H (2012) The first climate refugees? Contesting global narratives of climate change in Tuvalu. *Glob Env Change* 22:382–390
- Featherstone D (2013) The contested politics of climate change and the crisis of neo-liberalism. *ACME* 12:44–64
- Felli R, Castree N (2012) Neoliberalising adaptation to environmental change: foresight or foreclosure? *Env Plan A* 44:1–4
- Fiddian-Qasimiyeh E, Loescher G, Long K, Sigona N (eds) (2016) *The Oxford handbook of refugee and forced migration studies*. Oxford University Press, Oxford
- Foresight (2011) *Migration and global environmental change*. Report for The Government Office for Science, London
- Gemenne F (2011) Why the numbers don't add up: a review of estimates and predictions of people displaced by environmental changes. *Glob Env Change* 21S:41–49
- Gentle P, Thwaites R, Race D, Alexander K, Maraseni T (2018) Household and community responses to impacts of climate change in the rural hills of Nepal. *Clim Chang* 147:267–282
- Guan J, McElroy JL (2012) The determinants of migration in small islands. *Island Stud J* 7:80–95
- Hartmann B (2010) Rethinking climate refugees and climate conflict: rhetoric, reality and the politics of policy discourse. *J Int Dev* 22:233–246
- Hauzer M, Dearden P, Murray G (2012) The fisherwomen of Ngazidja island, Comoros: fisheries livelihoods, impacts, and implications for management. *Fisheries Res* 140:28–35
- Hirsch E (2015) "It won't be any good to have democracy if we don't have a country": climate change and the politics of synecdoche in the Maldives. *Glob Env Change* 35:190–198
- Hussain D (2008) *Functional translation of the Constitution of the Republic of Maldives 2008*. Ministry of Legal Reform, Information and Arts, Malé
- Kelman I, Stojanov R, Khan S, Gila OA, Duži B, Vikhrov D (2015) Islander mobilities: any change from climate change? *Int J Glob Warm* 8:584–602
- Kench PS, Ford MR, Owen SD (2018) Patterns of island change and persistence offer alternate adaptation pathways for atoll nations. *Nat Commun* 9:605
- King R, Connell J (eds) (1999) *Small worlds, global lives: islands and migration island studies*. Pinter, London
- Kothari U (2014) Climate change and migration: a political discourse of resettlement in Maldives. *Geogr J* 180: 130–140
- McCubbin S, Smit B, Pearce T (2015) Where does climate fit? Vulnerability to climate change in the context of multiple stressors in Funafuti, Tuvalu. *Glob Env Change* 30:43–55

- McLeman R, Gemenne F (eds) (2018) Routledge handbook of environmental displacement and migration. Routledge, Abingdon
- Mortreux C, Barnett J (2009) Climate change, migration and adaptation in Funafuti, Tuvalu. *Glob Env Change* 19:105–112
- National Bureau of Statistics (2015) Maldives population and housing census statistical release II: migration 2014. Ministry of Finance and Treasury, Maldives, Malé
- Nerem RS, Fasullo J (2018) Observations of the rate and acceleration of global mean sea level change. Explaining extreme events in 2017 from a Climate Perspective, *Bulletin of the American Meteorological Society*. December:S1–S4
- Nicholson CTM (2014) Climate change and the politics of causal reasoning: the case of climate change and migration. *Geogr J* 180:151–160
- Nunn PD, Carson M (2015) Collapses of island societies from environmental forcing: does history hold lessons for the future? *Glob Env* 8:110–133
- Obokata R, Veronis L, McLeman R (2014) Empirical research on international environmental migration: a systematic review. *Pop Env* 36:111–135
- Orłowska J (2015) Living on the sinking islands. Social aspects of climate change on example of Maldives. PhD dissertation, Institute of Philosophy and Sociology Polish Academy of Sciences, Warsaw, Poland
- Palutikof J, Boulter SL, Ash AJ, Smith MS, Parry M, Waschka M, Guitart D (2013) Climate adaptation futures. Wiley-Blackwell, Chichester
- Paton K, Fairbairn-Dunlop F (2010) Listening to local voices: Tuvaluans respond to climate change. *Loc Env* 15: 687–698
- Pernetta J, Sestini G (1989) The Maldives and impacts of expected climate changes. UNEP Regional Seas Report No. 104. United Nations Environment Programme, Nairobi
- Peruma N (2018) “The place where I live is where I belong”: community perspectives on climate change and climate-related migration in the Pacific island nation of Vanuatu. *Island Stud J* 13:45–64
- Petersen W (1958) A general typology of migration. *Am Soc Rev* 2:256–266
- Pieterse JN (2000) Globalization and human integration: we are all migrants. *Futures* 32:385–398
- Rankey EC (2011) Nature and stability of atoll island shorelines: Gilbert Island chain, Kiribati, equatorial Pacific. *Sedimentology* 58:1831–1859
- Romero-Frás X (2003) The Maldive islanders: a study of the popular culture of an ancient ocean kingdom. Nova Ethnographia Indica, Barcelona
- Simonelli AC (2015) Governing climate induced migration and displacement: IGO expansion and global policy implications. Palgrave Macmillan, New York
- Skeldon R (2012) Going round in circles: circular migration, poverty alleviation and marginality. *Int Migration* 50:43–60
- Sovacool BK (2012a) Expert views of climate change adaptation in the Maldives. *Clim Chang* 114:295–300
- Sovacool BK (2012b) Perceptions of climate change risks and resilient island planning in the Maldives. *Mit Adapt Strat Glob Change* 17:731–752
- Stal M, Warner K (2009) The way forward: researching the environment and migration nexus. UNU EHS (United Nations University Institute for Environment and Human Security), Bonn
- Statistical Yearbook of Maldives (2015). National Bureau of Statistics, Ministry of Finance and Treasury, Malé
- Stojanov R (ed) (2014) Migration as adaptation? Population dynamics in the age of climate variability. Global Change Research Centre, The Academy of Sciences of the Czech Republic, Brno
- Sulu RJ, Eriksson H, Schwarz A-M, Andrew NL, Oirirana G, Sukulu M, Oeta J, Harohau D, Sibiti S, Toritela A, Beare D (2015) Livelihoods and fisheries governance in a contemporary Pacific Island setting. *PLoS One* 10:e0143516
- Titz A, Cannon T, Krüger F (2018) Uncovering ‘community’: challenging an elusive concept in development and disaster related work. *Societies* 8:71
- Truong T-D, Gasper D, Handmaker J, Bergh SI (2016) Migration, gender and social justice: perspectives on human insecurity. Springer, London
- UNICEF (2018) Maldives, Migration profiles UNICEF, New York <https://esaunorg/migmgmprofiles/indicators/files/Maldivespdf> Accessed 27 November 2018
- UNSD (2015) World Statistic Pocketbox: Maldives. <https://dataunorg/CountryProfile.aspx?crName=MALDIVES> Accessed 26 January 2016

Van Andel TH (1989) Late Quaternary Sea-level changes and archaeology. *Antiquity* 63:733–745

Withagen C (2014) The climate change, migration and conflict nexus. *Env Dev Econ* 19:324–327

Yamamoto L, Esteban M (2014) Atoll Island states and international law: climate change displacement and sovereignty. Springer, Heidelberg

## Affiliations

**Ilan Kelman**<sup>1,2</sup> · **Justyna Orlowska**<sup>3</sup> · **Himani Upadhyay**<sup>4,5</sup> · **Robert Stojanov**<sup>6,7</sup> · **Christian Webersik**<sup>8</sup> · **Andrea C. Simonelli**<sup>9,10</sup> · **David Procházka**<sup>11</sup> · **Daniel Němec**<sup>12</sup>

<sup>1</sup> University College London, London, UK

<sup>2</sup> University of Agder, Kristiansand, Norway

<sup>3</sup> Warsaw, Poland

<sup>4</sup> Potsdam Institute for Climate Impact Research (PIK), Berlin, Germany

<sup>5</sup> The Energy and Resources Institute, New Delhi, India

<sup>6</sup> Migration Policy Centre, Robert Schuman Centre for Advanced Studies, European University Institute, Villa Malafasca, Via Boccaccio 151, I-50133 Florence, Italy

<sup>7</sup> Department of Informatics, Faculty of Business and Economics, Mendel University in Brno, Zemědělská 1/, 613 00 Brno, Czech Republic

<sup>8</sup> Centre for Integrated Emergency Management, University of Agder, Kristiansand, Norway

<sup>9</sup> Department of Political Science, Virginia Commonwealth University, 827 West Franklin Street, P.O. Box 842542, Richmond, VA 23284-2542, USA

<sup>10</sup> Adaptation Strategies International, Richmond, VA, USA

<sup>11</sup> Department of Informatics, Faculty of Business and Economics, Mendel University in Brno, Brno, Czech Republic

<sup>12</sup> Department of Economics, Faculty of Economics and Administration, Masaryk University, Lipová 41a, 602 00 Brno, Czech Republic