

2023

NATIONAL ADAPTATION PLAN COMMUNITY ENGAGEMENT SUMMARY REPORT

Wothe Atoll



FIELD ENGAGEMENT TEAM: Sonia Tagoilelagi (IOM), Timothy Kabua (IOM), Martina Labaun (WUTMI), Bwojenta Kabua (WUTMI), Mannley Compass (Jo-Jikum), Deborah Schutz (Jo-Jikum), Loredel Faye Areieta (Jo-Jikum)

DATA PROCESSING, ANALYSIS, AND EDITING:), Scott Hafner, Angela Saunders (IOM), Colette Mortreux, Sergio Jarillo, Jon Barnett and Elissa Waters (Melbourne University)

WRITING: Colette Mortreux, Sergio Jarillo, Jon Barnett and Elissa Waters (Melbourne University)

OVERVIEW

The International Organization for Migration (IOM) was engaged by the Government of the Republic of the Marshall Islands (RMI) to lead community engagements on the National Adaptation Plan (NAP) in eight Atolls. The engagement team was comprised of IOM staff and three Non-Governmental Organization partners; Jo-Jikum focusing on youth, Women United Together Marshall Islands (WUTMI) focusing on women and inclusion, Marshall Islands Conservation Society (MICS) focusing on livelihoods. This Summary Report reflects the results of all agencies engagements that elevate and articulate the community members voices.

COMMUNITY BACKGROUND

Wotho Atoll is in Ralik chain in the north of the Republic of the Marshall Islands (RMI). It is comprised of three large and fifteen small islets. People live on the largest islet located in the north-east corner of the atoll called Wotho (Figure 1).

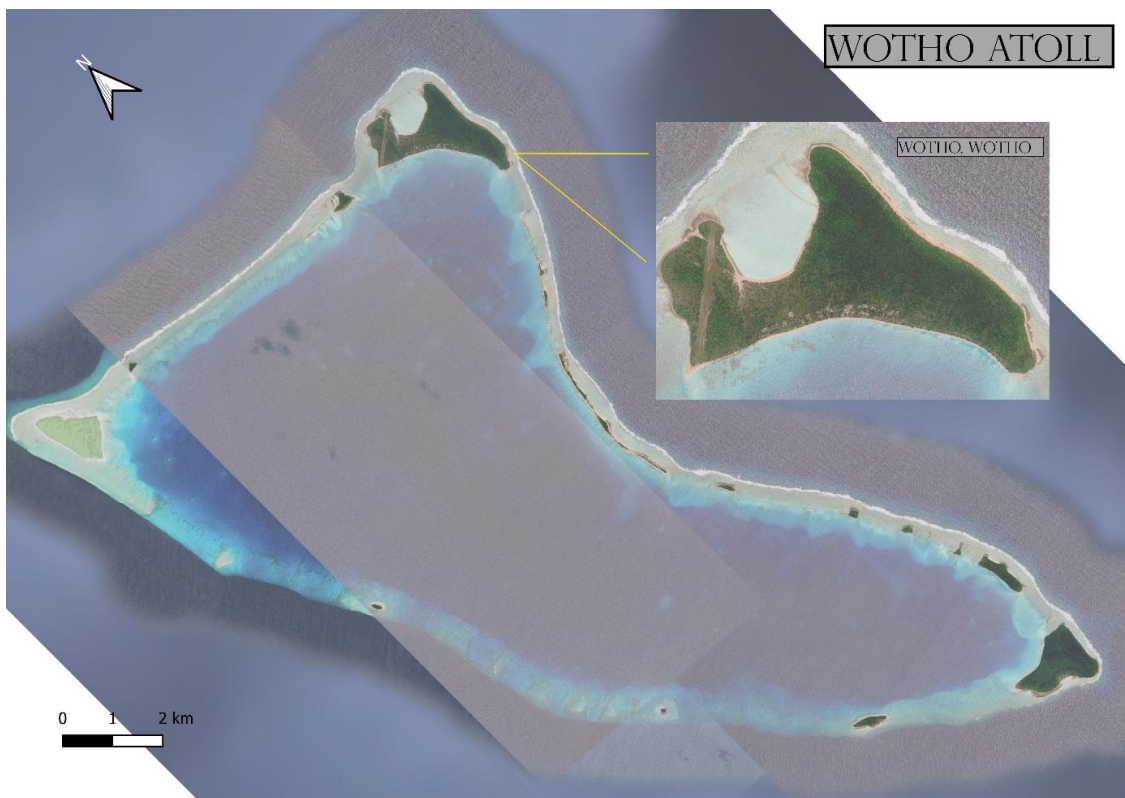


Figure 1: Map of Wotho atoll (IOM)

Livelihoods on Wotho Atoll are very dependent on the local environment, in particular agroforestry and fishing for food, and some export of copra and handicrafts. One study estimates that close to 90% of consumption comes from the natural environment, with average household monthly consumption estimated to be: 24 pelagic fish, 200 reef fish, 25 breadfruits, and 4 pandanus fruits.¹ The island's forests have been converted over centuries to be comprised of productive trees, including over 500 coconut trees, 400 pandanus trees, 100 breadfruit trees, and over 50 papaya and banana trees.²

Average household income in Wotho Atoll is estimated to be USD4,000, with the main sources of cash being copra sales (most households), sales of handicrafts (half of households), and salaries (70% of households).¹ Most households (over 75%) own both chickens and pigs.² The average household gets 40% of its water from rainwater tanks, 36% from wells, and 24% from reverse osmosis unit. Households all have solar PV units for electricity.

Wotho Atoll has a school, a medical dispensary, a small airport, and two churches. Transport services to Wotho Atoll are extremely limited, with a boat arriving every three months (noting though it had not visited the island for 6 months at the time of consultations), and two flights per month (at best). There is no wharf, and all people and goods are moved between the island and ships via a smaller boat (average 10 to 12 feet). Internet access is slow and restricted to one computer station at the school.² In the 2021 census no-one reported accessing the internet in the previous week.

According to the 2021 preliminary census Wotho Atoll has a population of 88 people (50% male and 50% female) living in 17 households. Its population has remained relatively stable in recent decades, fluctuating at around 100 people. There were, for example, 90 people recorded in the 1998 census, and 97 people recorded in the 2011 census. Community profiles collected during the consultations can be found in Annex 1. Prior to travel to the community, the team collected and learned as much as possible about the community, this information can be found in Annexes 2-13 Wotho Atoll is considered a rural community.

Previous studies have noted that Wotho Atoll experiences incidences of drought, including in 2013/14. It also experiences typhoons, and in 1992 Typhoon Gay destroyed killed many animals, destroyed many houses, and toppled many trees.

One study estimates the extent of flooding under different sea-level scenarios, suggesting that shorelines would retreat by up to 3 meters with a 16cm rise in sea-level, and that with 70cms of sea-level most houses would be flooded and over half of breadfruit trees would be lost due to salinity.³



Figure 2: Women of Wotho at a cultural even

CONSULTATION PROCESS

The consultation team visited Wotho Atoll in December 2022. The first thing to take place during the community consultations is the introduction meeting where information is provided to the community on the purpose of visit and what the NAP is and how it is going to support the community in the future. This is a vital step in setting the scene for the methodologies to follow. The consultation involved five methods: a transect walk to identify local observations of environmental change (with two people); a DIL activity where participants were asked in groups about their observations of environmental change, social impacts and how they anticipate daily activities to be affected in the future; focus group discussions, and semi-structured interviews with community members from targeted groups; an HVCM activity to identify community hazards, vulnerabilities, and capacities; a baseline survey to capture views on current and future adaptation; and Youth and Arts Engagement (Figure 2). Some individuals participated in more than one methodology.

Method	Female	Male	Youth	Middle aged	Elderly	Undisclosed
Baseline survey	4	2	0	6	0	0
Day in Life	12	11	4	18	1	0
Hazard mapping	10	13	n/a	n/a	n/a	n/a
Transect walk	1	1	1	1	0	0
Focus groups	14	19	13	-	-	20
Interviews	5	8	6	7	0	0
Youth and Arts Engagement						
TOTAL	46	54	24	32	1	20

Figure 3: Participant demographics by research method

GUIDING VALUES FOR ADAPTATION

Less than a fifth of the population of Wotho Atoll work for salaries or wages. Main activities include fishing, which approximately one third of people do; farming, which approximately one third of people do; and handicrafts, which approximately a quarter of people do. Most households therefore rely heavily on the natural environment for their livelihoods.

Despite some hardships, people in Wotho Atoll value their lifestyle, in particular the freedom that comes from living on their own lands and depending on local resources, and the strong sense of community and togetherness they share. Some describe the island as ‘paradise’, one woman said ‘my heritage is here’.

In focus groups, youth expressed pride in their culture and traditional ways of life. People in Wotho Atoll are proud of the island’s reputation as a traditional food basket for the RMI (an unrealized potential given poor transport services), and its fishers are proud of the quality of their fishing areas.²

These values are relevant to adaptation in that they demonstrate the community’s attachment to living in Wotho Atoll, including having continued access to natural resources and a traditional way of life.

CLIMATE CHANGE EXPERIENCES AND CONCERNS

The single biggest observation of climate change in Wotho Atoll is sea-level rise (Figure 4). However, taken together, observations of changes in rainfall, air temperature rise, and drought are far more numerous.

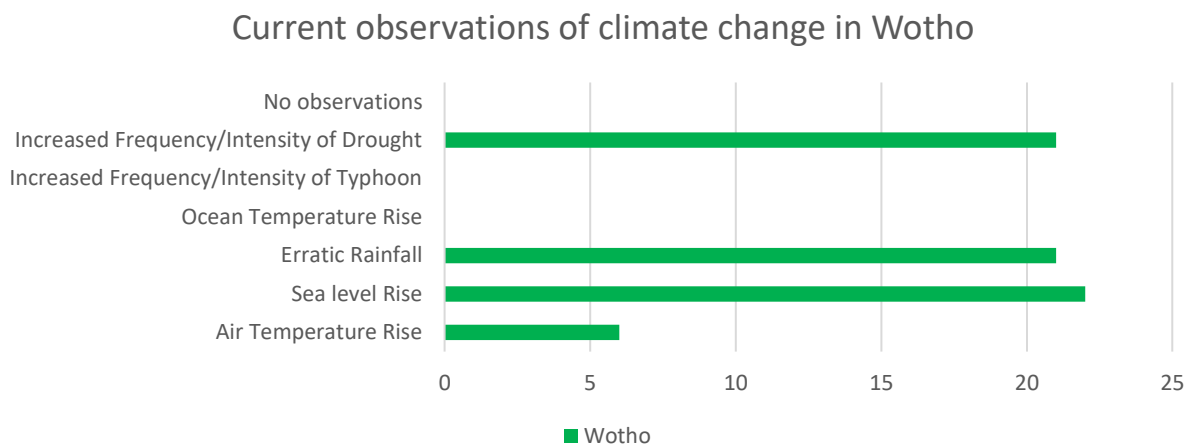


Figure 4: Observations of climate change

Many respondents, including most women and youth, reported increasing heat on the island. This was described by one respondent as ‘overwhelming’. This, coupled with less rainfall and changes in weather patterns (longer dry seasons) led almost all respondents in interviews to report that drought was a problem, which is supported by findings from previous studies.¹ El Nino years appear to bring more drought to Wotho Atoll.¹

The most frequently reported impact of drought was on the growth of grasses, food crops and plants used for handicrafts. In some places this is being compounded by increasing salinity of groundwater and soils. Inundation and flooding are also causing loss of vegetation in some places (Figure 5).

During the Youth and Arts Engagement, youth brought up concerns around both air and sea pollution, dryness in the island, and coral bleaching.

These changes in heat and water affect food security. The vast majority of people in Wotho Atoll have observed reduced crop yields. Traditional crops are said to be less abundant and fruits of poorer quality. Women have reported that it now takes more time and effort to access traditional crops. Copra is harder to produce because there are fewer coconut trees, and taro swamps are drying up.

People expressed particular concern about reduced yields of breadfruit, which ripens up to 2 months earlier than usual in dry years. Many people observed problems with the fruit itself, saying it is smaller, decayed, and rots quickly once harvested. Increasing heat also means people spend less time harvesting and planting crops in the middle of the day. Increased heat was also said to affect student learning.

Transect walks with members of the community identified 14 wells that are increasingly contaminated by salt water due to sea-level rise and reduced rainfall. Increasing heat and a lack of rainfall was also said to be causing more dust in the island, as well as an increase in cases of diarrhea.



Figure 5: Example of climate impacts identified by community members in Wotho Atoll

There were many reports of coral bleaching. Fish stocks were said to be declining, and the behaviour of fish is less predictable, in turn increasing the effort required to catch fish. This is consistent with earlier research, in which fishers reported decreased water quality and fish catch in some areas, said to be caused by increasing algae in some areas.²

There were many reports of sea-level rise and coastal erosion. Flooding during high tides is common, and flooding also occurs during typhoons. An earlier study reporting that 80% of households had reported flooding.¹ There is episodic flooding of the northern end of the runway, and some houses are flooded two or more times per year.

Increasing effort to procure crops and fish, and/or decreasing supply of local foods impacts on people's livelihoods, either in the form of more work, less food, or increased spending on imported foods. Women said that increasing heat and drought was increasing stress in their lives. Women are responsible for providing food and increasingly are expected to contribute financially to households. Many do this through handicrafts.

Community members also reported that a lack of canoes, small boats and fuel fishermen rely on nearby fishing grounds, which puts these stocks at greater risk of over exploitation. It also means people are unable to harvest food and water from other islets in the atoll. Local canoes are made from breadfruit trees, and there are not enough that can be spared from food supply to make more canoes.

Other infrastructure challenges include the lack of access to the internet, which limits the provision of education, financial services, information about government services and policies, healthcare, and information about current affairs including climate change. People also reported having insufficient power supply to their homes, which creates challenges and increased work (mostly for women) associated with cooking, food storage, and washing. Electricity supply to the health clinic was also said to be insufficient relative to needs.

There are several social problems that concern members of the community. Migration is a concern for most community members, and they identify the main causes of this as being a search for better economic opportunities, and to access health care. Domestic violence is a concern for women, who said they wanted a women’s champion or Gender Based Violence (GBV) counsellor because they don’t feel comfortable reporting domestic violence to the local authorities who are mostly male. Youth feel somewhat marginalised from decision making. When asked about the potential effects on the community if climate change is to worsen, one fishermen stated:

“The community won’t look after each other because there will be limited resources such as foods and drinks.” (male participant)

ADAPTATION PRACTICES AND IDEAS

To substitute for reduced yields of key food crops such as breadfruit, people purchase more imported foods. At times government food relief is supplied when food production is low, as was the case in 2016 drought. The community has also worked to re-plant resilient crops such as pandanus.

A solar powered reverse osmosis (RO) unit with a 350 gallon/day capacity was installed by the RMI government after the 2013/14 drought. People are increasingly relying on this as a source of water, making its maintenance an increasingly critical task.

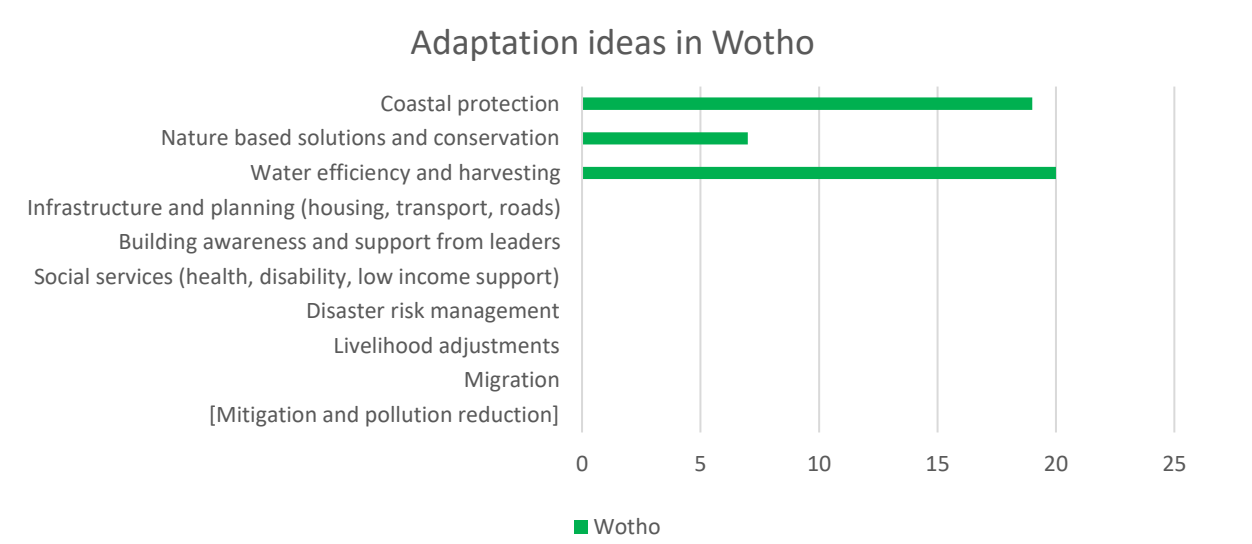


Figure 6: Main ideas for adaptation in Wotho Atoll based on Day in the Life activity

Pandanus is planted for coastal protection, which has the added benefit of supplying more materials for handicrafts. In a few instances people have used palm fronds and other vegetation to try and prevent erosion of sand. DIL participants shared their ideas about future adaptation. Notably, no participants discussed migration as an adaptation idea. Most related to infrastructure, followed by coastal protection measures, water security actions, and livelihood adjustments.

People in Wotho Atoll have many ideas about how to adapt to climate change. In response to sea-level rise, they are much more interested in nature-based solutions rather than seawalls as responses to erosion, with hard engineering solutions seen as a last resort. Planting pandanus and other trees (including possibly mangroves) to stabilise shorelines was suggested. Two people suggested houses be elevated to prevent flood damage.

In response to drinking water shortages, people were in favour of more water catchments (bigger roofs and better gutters to supply bigger rainwater tanks). Cement catchments are not preferred as they are prone to get dirty and cleaning them is difficult.

In terms of food, it was commonly suggested that there be more planting of crops, including using more sites for growing crops, and training people in different methods of gardening and food production, including solar powered aeroponic towers. More tools are needed to improve production of food crops. One study suggests a program of replanting fruit trees (bananas, breadfruit, coconut, pandanus and papaya) and improvement in agroforestry management to sustain yields from breadfruit and other fruit trees.² Replanting salt tolerant species along shorelines may also help prevent erosion and damage from extreme waves. This would require the use of both traditional knowledge and external assistance to provide seeds and develop a management plan.

The community considers better transport services as key to their ability to adapt. This includes more flights, more frequent ships connecting the atoll to other atolls, and more canoes and boats for travel within the atoll to diversify sources of water food. It was suggested that a couple more vehicles would help to move goods – including copra – around the island. Youth requested the use of bicycles as a means of internal transport to avoid the use of fossil fuels and promote healthy living.

Women requested an emergency management shelter stocked with food, tampons, food, water, and flashlights, and with multiple rooms that could also serve as a safe house at other times. This could be a new facility, or at the hospital.



Migration was not seen as an adaptation option by anyone. Discussions of migration provoked feelings of sadness as people considered life away from their homelands. In response they expressed a desire for assistance to protect their islands, and a willingness to act to adapt.

Youth art work to the left shows under water scene, the word “jiban” in English means “help”.

Figure 7: Youth Arts Engagement product

Youth in Wotho Atoll expressed strong determination to remain and to protect and conserve their culture and wrote a song about this. They also conveyed an understanding that adaptation can proceed in steps, along a pathway, saying that it should begin by addressing short-term issues and then building on those to develop more significant responses.

In addition, there has been extensive previous work to develop two ideas for adaptation in Wotho Atoll. First, there is a well-developed proposal to develop a market in Ebeye for fish caught in Wotho Atoll (and nearby Lae Atoll and Ujae Atoll, collectively called the Kabin Meto islands). A feasibility study, a technical assessment, and a cost-benefit analysis of this option have all been conducted, yet implementation is still lacking.^{1,4,5} The main barrier implementation is the absence of a ship capable of transporting fish from the three Atolls to Ebeye (refrigeration is needed). Such a project would have several benefits: it would provide an alternative source of income for fishers in Wotho Atoll, it would improve shipping services between Wotho Atoll and Ebeye, and among the Kabin Meto islands, which would lower the costs of goods, help with exports of copra and handicrafts, improve access to health and education in Ebeye and beyond, and improve social connections and the sharing of resources between the Kabin Meto islands.

Second, much thinking has gone into developing a marine protected area in Wotho Atoll, which would help sustain the local fishery if the Ebeye fish market proposal goes ahead.^{1,2,6} In the consultations for the NAP restricting access to some fishing grounds was proposed as a solution to manage overfishing. The main co-benefit of such a scheme for adaptation include preservation of fisheries, and of marine ecosystems that help protect shorelines from erosion.

BARRIERS, OPPORTUNITIES, AND IMPLICATIONS FOR ADAPTATION

People in Wotho Atoll are experiencing climate change. Drought conditions are impacting on their water their food security, which is compounded by poor transport services to the island and within the islands. Sea-level rise is also observed, causing erosion and flooding during high tides. These changes threaten the health and well-being of people in Wotho Atoll, who are proud, enjoy life in their island, and determined to adapt to continue living in the homelands.

The list of adaptation options below reflects the many ideas about actions the community has expressed. Some of these require systemic changes that will have multiple co-benefits to the livelihoods and health of the community – most notably in the frequency and (lower) cost of air and sea transport; more canoes and small boats; and greater attention to the safety and well-being of women.

Adaptation activities that could begin immediately (identified by community and low risk of regret)
Increase the number and capacity of rooftop water catchments and rainwater tanks
Planting to help protect shorelines and increase the supply of materials for handicrafts
Introduce new gardens, improved plant varieties and practices, and a seed bank to support local food production
Develop an agroforestry plan, including a plan, and equipment, to plant new fruit trees and especially breadfruit trees
Increase the number of canoes and small boats
Implement the Ebeye fish market project

Adaptation activities that could begin in the next five years (identified by community and require further consultation and planning)
Site assessments to determine the causes of erosion and piloting nature-based solutions
Providing a better facility that can serve as shelter in times of disasters and a women's refuge
Consultations on future land uses, including to: <ul style="list-style-type: none"> • relocate houses near eroding coasts, • locate a potential new disaster shelter / refuge • plan locations for future houses and developments • determine the best locations for new gardens
Double the frequency of shipping and air services without increasing the cost
Pilot new housing systems that are elevated, cooler, and able to withstand strong winds
Implement a marine protected area

KEY OBSERVATIONS FOR FIELD ENGAGEMENT TEAM

During a final debrief and workshop session, project team members shared their naturalistic observations that were observed in the field. These are key takeaways from each community and key action points for each community provided by IOM, Jo-Jikum, WUTMI, and MICS.

Key Takeaways

- The community's ability to understand the changes in their environment and know it as a threat to their livelihood with little to no knowledge of the issues of climate change
- The community's sense of pride in their traditional and cultural ways of life as an element to combat climate change issues
- The community's realization and awareness of how short-term solutions can help prepare them for long-term ones
- Women indicated that during times of uncertainty and change brought on by climate change, individuals may look into revenue-generating ventures that are not harmful to the environment and that can sustain their families.

Key Actions

- Youth want bikes to combat use of fossil fuels and promote healthy living.
- Sea walls are requested but community members are more interested in exploring nature-based solutions-.
- More transportation required. Only one vehicle on the island, so when field ship (Marshall Islands Shipping Corporation boat) comes, it takes two days to go around the community and collect all the copra.
- More catchments requested. They currently don't use the existing cement ones they are prone to get dirty and cleaning them is difficult.
- Women want a Women's champion or Gender Based Violence (GBV) counselor because they don't feel comfortable reporting domestic violence to the local authorities (male).

Notes

¹ Dijkstra, H and Brander, L. 2018 *Ecosystem Service Assessment and Cost-Benefit Analysis of Ecosystem Based Adaptation Options for Wotho Atoll, Republic of the Marshall Islands*. Unpublished.

² Marshall Islands Conservation Society (MICS) and Coastal Management Advisory Council (CMAC). Undated. Wotho Atoll Resource Management Plan. Unpublished.

³ Muhlhausen, J., Stege, M., and Labilja, M. 2016. *Mapping the Island of Wotto Evaluating Flood Risk from Sea Level Rise*. International Union of Conservation of Nature, Micronesia Conservation Trust, CielMap, Marshall Islands Conservation Society, and Ministry of Internal Affairs. Unpublished report.

⁴ Jarrett, A., & Houk, P. (2018). The status of Kabin Meto fisheries: A technical report prepared for the Micronesia Conservation Trust and the Marshall Islands Conservation Society, with assistance from the Marshall Islands Marine Resource Authority

⁵ Stege, M. (2018). Ebeye Fish Market & Value Chain Analysis. Marshall Islands Conservation Society, RMI.

⁶ Marshall Islands Conservation Society MICS (2016). Wotto Local Area Action Plan, RMI.

For more information contact

IOM: Angela Saunders (aksaunders@iom.int; iommicronesia@iom.int)

Jo-Jikum: Loredel Areieta (delosereyes.areieta@gmail.com) Kathy Jetnil-Kijiner (ikijiner@gmail.com)

MICS: Dolores de Brum Kattil (director@atollconservation.org), Dua Rudoph (dua@atollconservation.org)

WUTMI: Daisy Alik-Momotaro (wutmi26@gmail.com)

Annex

1. Wotho, Wotho Community Profile
2. (draft) Wotho Atoll Disaster Management Plan
3. Ecosystem Service Assessment and Cost-Benefit Analysis of Ecosystem Based Adaptation Options for Wotho Atoll, Republic of the Marshall Islands
4. Kabin Meto Fishery Report
5. Mapping Sea Level Rise on the Island of Wotto Nov 13 2016
6. RMI R2R – Coral Reef Benthic Community of Wotho Atoll – Technical Report
7. Wotho Anthropological Survey 2004
8. Wotho Archaeological Survey revisited 2020
9. Wotho Atoll HVCM Exercise NAP
10. Wotho Atoll Resource Management Plan
11. Wotho Island Height and TEK mapping
12. Youth and Art Engagement Wotho