CTA
Working Paper
18/03

Building the Evidence Base on the Agricultural Nutrition Nexus: Marshall Islands

Series: Agriculture and nutrition

CTA Working Paper 18/03 | March 2018

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Table of contents

List of tables

List of acronyms

ADB	Asian Development Bank
BMBM	Be Marshallese, buy Marshallese
CMI	College of the Marshall Islands
CTA	Technical Centre for Agricultural and Rural Cooperation
EPA	Environmental Protection Agency
EPPSO	Economic Policy, Planning and Statistics Office
EU	European Union
FAO	Food and Agriculture Organization of the United Nations
FNS	Food and nutritional security
GDP	Gross domestic product
IFAD	International Fund for Agricultural Development
JFPR	Japan Fund for Poverty Reduction
M&E	Monitoring and evaluation
MIMRA	Marshall Islands Marine Resources Authority
MIOFA	Marshall Islands Organic Farmers Association
MNRC	Ministry of Natural Resources and Commerce
MOH	Health and Human Services
NCD	Non-communicable disease
NGO	Non-governmental organisation
NRC	Ministry of Natural Resources and Commerce
NRD	Ministry of Natural Resources and Development
PIPSO	Pacific Islands Private Sector Organisation
R&D	Research and development
RMI	Republic of the Marshall Islands

SDG	Sustainable Development Goals
SOE	State owned enterprise
SPC	Secretariat of the Pacific Community
TVET	Technical and vocational education and training
UN	United Nations
UNDP	United Nations Development Programme
UNFP	United Nations Population Fund
UNICEF	United Nations Children's Fund
US	United States
USP	University of the South Pacific
WB	World Bank

Acknowledgements

This study was carried out as part of CTA's programme on enhancing links between agriculture and nutrition. It was further updated within the context of the CTA/IFAD/PIPSO Project on "Promoting Nutritious Food Systems in the Pacific Islands".

This study would not have been possible without the generous support and time offered by various collaborators from government, development agencies, academic institutions, NGOs and the private sector in the Republic of the Marshall Islands (RMI). The author would like to especially thank Secretary of Health and Human Services, Ms. Julia Alfred, for her assistance and her team's support in arranging some meetings and hosting a seminar on 27 December 2017 to debrief the CTA mission. The author also thanks everyone who gave their time, especially during a busy traditional holiday period. Finally, the author would like to thank RMI Chief Secretary, Mr. Benjamin Graham, for taking the time to offer helpful comments on this working paper before it was published.

About the project

The project "Leveraging the Development of Local Food Crops and Fisheries Value Chains for Improved Nutrition and Sustainable Food Systems in the Pacific Islands with a focus on Fiji, Kiribati, Marshall Islands, Samoa, Solomon Islands, Tonga, and Vanuatu" is co-funded by the International Fund for Agricultural Development (IFAD) and the Technical Centre for Agricultural and Rural Cooperation (CTA) and is implemented in partnership with the Pacific Islands Private Sector Organisation (PIPSO). The goal is to strengthen the capacity of the Pacific Island governments, farmer and private sector organisations, and sub-regional institutions to develop strategies and programmes – as well as mobilise financing – that can increase poor rural people's access to nutritious and healthy food. CTA has overall responsibility for the implementation of the project.

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Executive summary

This report summarises results of a rapid country scan on the agriculture-nutrition nexus in the Republic of the Marshall Islands (RMI). Research included a desk review of accessible policies, programmes and other documents, published and unpublished, as well as a field mission to RMI from 11 to 30 December 2017. The mission allowed additional quantitative and qualitative data gathering with interviews, site visits and a small seminar to debrief interviews, present preliminary findings and discuss potential follow-up with some stakeholders.

One significant and problematic finding from the rapid scan is that: malnutrition, including child hunger, stunting, obesity, and non-communicable diseases (NCDs) such as diabetes and other chronic health problems, appear to be strongly associated with poor diets as well as not enough cultivation and consumption of traditional and local nutrient dense foods, including a high dependency on imports making up at least 90% of RMI food supply.

Although the RMI government has undertaken some useful measures in recent years to address such challenges, this paper suggests there is still an urgent and overarching need for a whole of government, inter-agency, cross-sectoral response to reduce food import dependency and associated NCDs in partnership with farmers, fishers, non-governmental organisations (NGOs), academia, the private sector, investors and donors. A major national transformation is also essential to encourage national self-sufficiency while improving and expanding local agriculture production to promote long-term food and nutritional security with climate change resilience. Such a transformation can build on evidence from scientific research as well as traditional knowledge and culture. But a full national agriculture census is needed so technical experts and decision-makers can better understand core agronomic, production, ecological and socioeconomic data while identifying specific agri-food system sector needs and best target areas for future investments.

It is hoped this paper can provide some useful evidence and analysis to assist in designing and implementing a new national capacity strengthening strategy with a clear operational plan that would measurably improve dietary practices, increase agricultural production and promote new or improved value chains among more of the population. Such a plan should be considered part of a long-term systemic investment in food and nutritional security (FNS), as well as national self-sufficiency for RMI. It could build on existing best practices or promising activities as well as new initiatives. But any new plan should have specific goals, agreed targets (by RMI's Cabinet) and realistic indicators linked to the Sustainable Development Goals (SDGs). The plan should aim to reduce dependence on non-essential, non-nutritious and otherwise unhealthy food imports, and to measurably increase local food production and consumption. It could help to bring new job creation, small business development, private sector investment and innovation, and other income generation opportunities. Broader outcomes (also linked to SDGs) could be reduced poverty, improved agri-food system quality and safety, better health and nutrition, more protected ecosystems to address climate change, and strengthened and diversified community livelihoods, especially for marginalised Outer Islands peoples.

Key messages

For government, private sector, investors, donors, NGOs, farmers, fishers and other development partners.

Main issues

- Malnutrition and NCDs including child hunger and stunting, diabetes, overweight and obesity are partly associated with poor diets and not enough cultivation or consumption of traditional or local foods while at least 90% of RMI's food supply is imported.
- Food import dependency (linked historically to foreign aid, investment and trade over the past half century), has grown and become problematically entrenched while local agriculture development has been neglected as well as associated employment.
- Government, private sector, investors, donors and other development partners have largely ignored the agriculture sector since RMI's founding in the 1980s while food and nutritional security have suffered. This must change. Agriculture must become a clear future priority to strategically address long-term food and nutritional security while creating new business, employment and income generation opportunities from local food products and other agricultural activities or by-products.

Data and evidence

- As much as 80% of the entire RMI population (according to 2014 data) is overweight, while youth overweight and obesity prevalence was 26.5% in 2016 (first year tracked).
- Around 27% of the RMI population (20-70 years) has diabetes, which was also the number one cause of mortality with 480 deaths in 2014 and 429 in 2015.
- In 2017, some 35% of children (48-59 months) were stunted, while 72% of non-pregnant mother caregivers (15 to 49 years old) were overweight and 45% obese, in large part due to inadequate nutrition or consumption of too much of the wrong types of foods.
- Consumption of sugary junk foods or drinks in RMI is associated with higher stunting prevalence (39.3%) compared to children (27.7%) not consuming them.
- In 2017, only 59.8% of surveyed RMI households appeared food secure, 7% were mildly food insecure; 13.4% moderately food insecure and 19.7% severely food insecure.
- According to the 2011 census, only a small majority of households (52%) raised crops, while 42.2% grew them for subsistence; 10.2% for both income and subsistence; and 0.2% for income, while just 9% of RMI households own agricultural land.

- Various studies suggest that agriculture associated gross domestic product (GDP) in RMI in the past decade was either “negligible”, around 4%, or as much as 14% (data sources seem to conflict).

Identified needs

Agronomic-marine, environmental and value-chain needs

- More value-added processing, transport and marketing;
- Salt tolerant, “climate smart” and drought-resistant plant or tree varieties;
- Local community nurseries and centres for local genetic resources conservation, seed saving, cultivation and cuttings propagation on each of the Outer Islands;
- More space for school gardens with full-time care-takers and teacher coordinators;
- Long-term renewal and investment in the coconut and copra industry.

Education, extension and technical support needs

- More technical support and human or financial resources for the Outer Islands, especially in partnership with relevant government authorities and NGOs;
- Improved and expanded farm extension services implemented by adequately educated and trained extension workers;
- Updated, more relevant technical and vocational education and training (TVET);
- More public awareness, education (non-formal and formal) and teacher training on nutritional or food security values of traditional plants or native species in local diets.

Core research needs

- Better available, accessible and systematically collected agricultural statistics, since existing RMI agriculture data is poor while some sources, indicators and findings from different studies or external sources conflict or are not comparable;
- More agronomic, interdisciplinary and social sciences research on FNS issues.

Main action recommendations

1. Monitor, assess, strengthen and scale-up best practices (and good intentions) from recent initiatives (e.g. Wellness Center, school gardens, organic farm training, etc.).

2. Evaluate the implementation and impacts of RMI’s 2013 Food Security Policy.

3. Conduct a full nation-wide agriculture and food system census to collect and analyse economic, agronomic, social, environmental and value chain data in one place.

4. Begin new long-term collaborative, participatory research in cooperation with international agencies and academic institutions on the diverse barriers or constraints and incentives, enabling factors and policy options to healthier and more sustainable diets, agri-food systems, market opportunities, procurement and value chains.

5. Develop a clear cross-sectoral strategy and national plan (through public, private, producer, community collaboration) to substantially increase local agriculture production and processing (in support of value chain development), and with measurable targets (linked to SDGs) to encourage self-sufficiency and healthier diets and reduce food import dependency. Adequate government funding, private sector investment and donor support must be mobilised for successful implementation, monitoring and evaluation. As an initial pilot, ten priority traditional agroforestry, roots/tubers, vegetables and marine species that are important for food and nutrition security, have income generation potential and can be branded as unique RMI should be targeted.

Introduction

The Marshall Islands include 29 atolls and 5 low coral islands with a total population of around 55,000 projected for 2017. The last official census was in 2011 recording a population of 53,158 but current estimates vary. The main urban centre is Majuro Atoll with a population of 27,797 in 2011. Majuro is home to the main international airport and the seat of national government. Residents generally refer to all areas outside Majuro as the "Outer Islands." The other urban centre is Ebeye with a population of around 15,000 where a large part of the work force commutes to nearby Kwajalein Atoll, home to an American military base.

The present paper focuses principally on interviews and other data collected about and around Majuro Atoll during a field visit from 11-30 December 2017. References to the Outer Islands are second hand from interviews, secondary sources or available technical reports since it was not logistically feasible to travel beyond Majuro.

This report contributes to a larger study on "*Building the Evidence Base for Leveraging the Development of Local Food Crops and Fisheries Value Chains for Improved Nutrition and Sustainable Food Systems in the Pacific Islands.*" Similar work is being conducted in other Pacific Islands (namely Fiji, Kiribati, Samoa, Solomon Islands, Tonga and Vanuatu), some of which share similar agricultural development or FNS challenges amid global or regional socioeconomic trends and local environmental concerns and climate change.

The report provides a brief overview of: a) principal RMI contexts and challenges for this study; b) main actors in RMI implicating FNS, agriculture and fisheries; c) policies, legislation and plans relevant to FNS, agriculture-fisheries and value chains; d) examples of selected FNS and agriculture development related projects and programmes; e) empirical data and policy-relevant evidence implicating FNS from a rapid scan of various documents, studies and databases, published and unpublished; f) offices and agencies consulted (during 11-30 December 2017 mission); e) observations and reflections from interviews, field visits and reports; and g) conclusions and action recommendations.

Principal contexts and challenges for the present study

Principal contexts and challenges for the present study include climate change, imported food dependency, loss or neglect of traditional cultural practices, malnutrition and NCDs such as diabetes with substantial related deaths, and many other chronic health problems or casualties associated with poor or inadequate diets on one hand, and over-nutrition of the wrong types or quantities of food on the other. Lack of exercise and broader lifestyle contributions to NCDs may be relevant but are not discussed here. RMI reliance on imports (at least 90% of the food supply is shipped or air-freighted, most from the United States thousands of miles away), is a major glaring context and practical challenge for the nation. Moreover, food imports combined with a variety of other factors appear to be a significant contributor to NCDs with not enough available local agriculture production or purchasing alternatives.

One of RMI's common imported food staples is polished white rice with limited nutritional value. Some studies have suggested excessive consumption of such white rice is associated with increased risk of type 2 diabetes in some populations (Hu, Pan Malik and Sun, 2012). Rice was historically not a traditional food in RMI and has never been grown in the country.

One overarching context for the rise in food-related NCDs has been a major historic transformation from traditional to "modern" culture amid a geopolitical and regional security alignment following World War II that included significant external aid and encouraged dependence on food imports, mostly of American products. After 1947, the United States (US), under United Nations (UN) auspices, effectively governed the Marshall Islands as a US Trust territory. The new RMI entered into a "Compact of Free Association" in 1983 with the US, but continued to receive substantial American aid while many RMI policies and programmes closely aligned with American strategic security, trade and economic interests. American annual contributions of around US$ 13 to US$ 16 million to the RMI Trust fund are scheduled to end in 2023. A large part of US compact funding has targeted health and education as priority sectors (which are particularly important for FNS related programmes). As such, some Marshallese (including a few interviewees consulted for this study) have expressed concern about a possible void in some government funding after 2023. This could have implications for future financing of FNS related programmes and projects. The most recent RMI FY2016 Economic Brief points to a mixed picture for availability of future resources from the Compact Trust Fund post-2023 with projections that suggest economic instability and uncertainty (EconMAP, August 2017).

Amid such uncertainty the 2016 Economic Brief also highlights a trend in "booming donor support" while government has capacity limitations to absorb and manage some types of funds (EconMAP, August 2017). RMI has a pipeline of various ongoing, pending or not yet clearly identified but potential projects from major multilateral donors including the Asian Development Bank (ADB), European Union (EU) and World Bank (WB). RMI is no longer eligible for loan financing so major donors recently switched to grant-only support. The ADB now has allocated approximately US$ 6 million a year available for grants. Other grants previously came to RMI via the Japan Fund for Poverty Reduction (JFPR) managed by the ADB, and more JFPR support could follow. The EU has allocated €9.1 million under the European Development Fund

(EDF) to be spent before 2020. The WB has potential (not allocated) funding of over US$ 100 million including some from the Global Climate Fund (GCF). RMI will host one or more donor review meetings in 2018 and discuss future plans.

One major initiative just getting underway relevant to any future agriculture-nutrition work is a WB and UNICEF grant of at least US$ 6 million allocated for 2018-2020 to address key findings and recommendations from the Integrated Child Health and Nutrition Survey 2017 (RMI-MOH, EPPSO, and UNICEF, November 2017). A scoping mission of WB and UNICEF experts with others is planned with government and other partners in February 2018 to assist the government in beginning to design and implement the new project.

Aside from just a few such larger scale national projects at present or pending, and although there are also a few good small FNS or agriculture-related projects or programmes led by the government, local authorities, or some NGOs, RMI has no significant donor investments focused on agriculture and rural development or food security. However, some government officials and other stakeholders have identified this as a significant gap. There also appears to be a strong need for cross-sectoral work in the agriculture and food security sector that could complement the new WB and UNICEF child and nutrition project set to begin in 2018.

Main actors in RMI implicating FNS, agriculture and fisheries

Main actors implicating FNS, agriculture and fisheries are government agencies including state owned enterprises (SOEs) with the exception of a few key foreign organisations based in RMI. External actors include various American programmes or funding envelopes some integrated with the US national budget and compact funds or a few international donors supporting projects in various degrees (Australia, Canada, EU-ACP, Japan, etc.). Most visible and long-standing are Taiwan's established technical mission (a diplomatic outpost with a major focus on agriculture), and one academic institution, the College of the Marshall Islands (CMI) land grant programme. A large part of CMI funding comes through US congress authorisation. Both the Taiwan mission and CMI do some agriculture extension, outreach and related research.

Some UN Agencies as well as regional organisations such as the Secretariat of the Pacific Community (SPC) are also involved in RMI. The UN currently has a small, "joint presence" office in Majuro, including UN Women, UNICEF, UNFP and UNDP. At present only one person staffs the office, the UNDP-GEF (Global Environmental Finance) small grants coordinator, also acting manager for all agencies. The UNDP has provided some small grants to agriculture and food security projects. Independently, from its regional office in Suva, Fiji, another UN agency, IFAD, has provided small grant funding to NGOs in RMI, particularly (see projects list section below) in cooperation with the Pacific Organic Ethical Trade Community (POETCOM) supported by the SPC. The International Organization for Migration (IOM), a UN associated agency, also has a small office in Majuro dealing sometimes with food security issues related to disaster response and management.

The ADB has a small one-person development coordination office (not a full mission) which helps facilitate ADB-government liaison about ADB and related projects. The WB is an important donor actor, but does not maintain a physical presence in Majuro. However, since the RMI government is no longer eligible for loans from ADB or WB, both agencies could offer small grant amounts for FNS or agriculture related activities.

Aside from specific projects or donors, a number of national ministries and other governmental institutions are actively involved in (or touch on in varying degrees) FNS, agriculture or home or school gardening, as well as food safety, policies and programme delivery, at the central, district and local levels. There appear to be some clear areas of line authority within each ministry, however, several FNS issues overlap and impact different sectors or levels of government which sometimes results in coordination challenges and interpersonal conflicts. Principal national ministries involved in FNS or nutrition, agriculture, agro-forestry, food safety, fisheries and income generation or community development at the national level are as follows.

The Ministry of Natural Resources and Commerce (MNRC). The current MNRC, renamed recently from the Ministry of Natural Resources and Development (NRD) is still recognised by many as NRD. The MNRC has a division of agriculture and quarantine responsible for agriculture production services, plant and animal protection services, and agricultural policy and planning. It is responsible for agriculture and agro-forestry and extension services to farmers. One significant planned development (beginning in 2018) will be hiring of 18 new

agriculture extension agents, to be based largely on islands or atolls outside Majuro. The MNRC manages a small (but not well maintained) nursery adjacent to its main office in Majuro and sometimes brings seedlings or cuttings to the Outer Islands. The MNRD (in coordination with other ministries and stakeholders) drafted and secured government approval of the 2013 Food Security Policy still currently in force and under implementation. The new MNRC is also responsible for export and trade policies, some affecting FNS. In 2016, the RMI Government prioritised some trade and economic growth initiatives to encourage future national development. A new national export strategy will highlight export potential in five identified sectors, three of which prioritise agri-food products, namely fisheries, pandanus (particularly juice) and coconut. The MNRC also leads domestically the "Be Marshallese, Buy Marshallese campaign," an outcome of a nationwide policy endorsed in 2014 by the cabinet to promote Marshallese products and services (cited in RMI, 2016b, p. 9).

The Marshall Islands Marine Resources Authority (MIMRA) is responsible for policies, regulations and monitoring of all types of coastal fisheries and high seas as well as aquaculture and mariculture including support for oyster and clam production, or by-products. MIMRA is an SOE with headquarters located on Majuro Atoll while it acts as a business and broker, for small fishers, as well as a regulator for larger private companies, operating in domestic and international waters. MIMRA has mostly been involved in wild capture fisheries (coastal and high seas) while bringing small fishers' catches from the Outer Islands to Majuro markets and domestic consumption across the Islands. MIMRA also has a strong interest in diversifying to further develop aquaculture for export and food security. Presently it manages one recent aquaculture pilot site in the Majuro lagoon which supplies fish products to local supermarkets and some for export (see MIMRA, June 2005; and RMI, 2016a).

The Ministry of Health and Human Services. The health ministry is responsible for policies, regulations and monitoring of all types of care or interventions related to nutrition, preventive care, child and maternal health, and patient care, and emergency medicine, as well as collaboration with other ministries and national or local authorities, as well as NGOs concerning food safety, nutrition and the challenge of NCDs especially diabetes which is a significant concern for RMI. The health ministry led a Food Safety Task Force and contributed to a 2010 Food Safety Act in coordination with other key ministries such as MRNC and others. The health ministry has worked closely with development partners such as UNICEF to conduct child and maternal nutrition surveys to gather updated reliable data and evidence to assist in policy development, government decision-making, programme planning and delivery. It collaborates closely with the Wellness Center NGO located adjacent to the hospital in Majuro to design and deliver prevention and outreach programmes, as well as provide a fitness centre and healthy food for hospital patient menus, some even grown in hospital gardens.

The Environmental Protection Agency (EPA) is responsible for policies and regulations related to water, sanitation and pollution monitoring. Two main issues related to health and food safety have been water and food quality testing of water catchments (both underground and harvested rainwater systems attached to many home, office and industrial buildings) as well as food vendors or restaurants which implicates the health and education ministries especially. The EPA

has also monitored farming on Majuro Atoll where the most sensitive issue historically has been in Laura District where some reports have noted leaching of chemical fertilisers as well as pig manure into the main aquafer (referred to by Marshallese as a “water lens”) and principal municipal water supply source for Majuro, aside from an airport runway catchment. The EPA has cooperated with other agencies, NGOs, development partners and farmers in Laura to minimise harm to the natural underground water system. Some farming practices are reported to be changing with recognition that well managed organic approaches can be safer. But adequate, solid reliable data from independent sources to measure current farming impacts on water supplies are lacking. EPA data on agriculture-related impacts on water supplies and food systems is limited. Studies have been funded by external actors such as the Japan International Research Center for Agricultural Sciences (JIRCAS). Updated and targeted research is needed.

The Ministry of Education is responsible for the school policies, programmes and curricula across RMI. With respect to farming, gardening, nutrition and food security it has cooperated with the health ministry, NGOs such as the Wellness Center, local authorities and others. Recently, the education ministry has been updating 2014 Rules and Regulations of the Public School System to better address hunger, poverty and nutritious school lunches for students through food services contracting. New national legislation has also been proposed (currently being debated but not yet passed) to prevent or mitigate sales of sodas and other sugary drinks on or near school grounds during school hours, as well as provide more local fresh fruits and vegetables in lunches. The other innovative initiative recently begun has been to launch a national learning garden programme to involve students and teachers in school gardening potentially with some links (not clear) to the curriculum. Depending on the type of school or location, urban or rural, some gardens could potentially provide a limited supply of certain foods for the school cafeteria or snacks. The ministry has hired a learning garden coordinator to manage this programme.

The Ministry of Culture and Internal Affairs (renamed recently from Ministry of Internal Affairs) with respect to food and nutrition plays a coordination role among other ministries and local authorities on overlapping policies and service delivery, especially to the Outer Islands. From time to time, subject to budget constraints, it leads an inter-ministry team which among other things might bring seedlings or plant cuttings from the MNRC nursery or others to farmers in the Outer Islands, and help facilitate others to bring local products to Majuro for sale. The ministry is responsible for drafting and implementing a recently adopted 2016/2017 National Gender Mainstreaming Policy which (relevant to FNS issues) underscores gender equality and the empowerment of women in an “enabling environment for equitable participation in, and benefit from, economic development” among five priority outcomes. The policy aims to “recognise, promote and support the contribution of women and men in agriculture and fisheries…and their respective roles in food security and rural development.” It pledges to “value and use local knowledge of women and men in disaster preparedness, food security and water security, in developing climate change adaptation strategies and programmes.”

A Mayors Council meets periodically, representing local governments from the Majuro as well as the Outer Islands. They meet among themselves and with various ministries or government departments or partners according to their agenda. Some individual mayors or council members are involved in FNS or agriculture related activities and are interested in future collaboration to receive donor funds and implement related projects. One council member is an executive member of the Marshall Islands Organic Farmers Association (MIOFA). Another mayor's representative, a Majuro city councillor, recently received from UNDP a small grant to initiate and manage a "one home, one garden project." Others from the Outer Islands are interested in doing different agriculture or FNS activities subject to funding or other resources.

The Office of the Chief Secretary is responsible for oversight of secretaries from all ministries. The chief secretary also tries to facilitate inter-ministerial or cross-sectoral cooperation on relevant files and to document and coordinate policies and programmes across all ministries or government departments. The chief secretary attends all national cabinet meetings offering technical support to the president and elected officials as well as liaison with development partners and donors. In 2018, the chief secretary will host one or more development partner meetings, specific dates and agendas, to be confirmed.

The Tobolar Copra Processing Authority is an SOE with a coconut processing plant located in a rural area of Majuro Atoll. The company brings material from all over the country including the Outer Islands to process raw copra or coconut meat into various products (such as cooking oils, bath soaps, animal feed and composting material) for domestic consumption and export. Processed copra is also one of RMI's few major value-added export products aside from seafood fisheries and mariculture. The copra industry is government subsidised so it also serves a national development purpose not completely driven by market forces. It provides processing jobs for Marshallese in its Majuro plant and other employment from harvesting and transport from the Outer Islands.

The Taiwan Technical Mission in the Republic of the Marshall Islands is one of the most established external state actors with a strong historical presence in RMI. The Taiwan technical mission has played an important role on FNS and agriculture issues through its diplomatic mission (including an office and demonstration farm based in the Laura district community of Majuro atoll). It has supported for more than a decade what has been known as the Laura Farmers Association about 15 to 20 local farm families currently). Taiwan has focused its work on RMI agricultural development; providing seeds, seedlings and piglets to communities in some Outer Islands, sometimes on technical missions in partnership with the government agriculture division of MNRC and others. Some RMI farmers, however, have historically complained that Taiwanese farmers in RMI were competing with local farmers instead of providing pure technical services (note comments in RMI, 2012, p. 62). Others have questioned to what extent the mission uses agrochemicals that pollute the environment or promotes the use of non-organic hybrid seeds instead of organic options. Whether such complicated and contentious issues have been fully resolved is unclear. But some Taiwanese still have agri-food business interests in RMI owning a few supermarket stores (Formosa brand) which sell a range

of imported products including some Taiwanese food or processed goods from juices to hardware.

The College of the Marshall Islands (CMI) has various academic, research and farmer extension programmes in RMI. The CMI main campus in urban Majuro has, over the past 25 years, offered a range of courses for entry level post-secondary students as well as some teacher training for the RMI public school system. Various activities also directly support agriculture, aquaculture, agro-forestry, food technology and nutrition study or implementation, particularly through American funding as a land grant college. CMI receives some core funding from the US congress as part of the American land grant college system. The land grant component of CMI's work for the Micronesia region as a whole is managed from Pohnpei, Federated States of Micronesia, where the administrator based there oversees RMI. The CMI conducts agriculture and aquaculture research while facilitating some farmer extension services from its rural Arrak campus base on Majuro Atoll, not far from the Laura District, the main farming area on Majuro Atoll.

The University of the South Pacific (USP) does some academic degree and continuing education programmes, mostly by distance learning, or short course intensives. The RMI campus is on the edge of Majuro close to airport. USP has some agriculture degree programmes but they are managed from the main campus in Fiji. However, USP does not have strong agriculture or FNS activities, teachers or researchers and technical experts based in RMI.

Principal FNS and agriculture related policies, legislation and plans

There are various FNS or agriculture related policies, laws and plans in RMI, led by government. A few websites refer to selected policies, legislation and plans about food, nutrition and agriculture development for RMI, but there is no one site that posts all relevant policies, legislation, proposed bills (not yet approved) and existing national departmental or agency plans. Some plans (at divisions or sub-department levels) also appear to be not available online at all, or have yet to be published. They may only exist in paper form or draft documents, concept notes and surveys not adequately analysed.

Table 1 below notes some principal national policies or plans implicating agriculture, fisheries, health and FNS or safety and related value chains and income generation issues. The table indicates date of agreement or a plan's start in chronological order noting ministries or agencies responsible for drafting or monitoring these policies or plans. Of particular importance some policies or plans specifically aim to combat NCDs and import dependency while encouraging national production and consumption of agricultural or fisheries products from RMI. For others such references or commitments are less clear but FNS related issues may still be mentioned. Some important data could be missing, however.

Table 1. Selected RMI national policies, laws or plans related to food and nutrition security (2005-2016)

Date	National policy or plan	Ministry or agency responsible
2005	*Policies and priority actions for sustainable mariculture development*	Marshall Islands Marine Resources Authority (MIMRA)
2005	*R&D strategy and action plan 2005–2010*	Natural Resources and Development (NRD)
2010	*Food safety act 2010, title 7 – public health, safety and welfare, chapter 19*	Health and Human Services (MOH)
2010	*RMI State-Wide Assessment and Resource Strategy 2010–2015*	Natural Resources and Development (NRD)
2012	*Technical-Vocational Education and Training Strategic Plan 2012-2014*	National Training Council (NTC)
2012	*Trade Policy of the Marshall Islands*	Natural Resources and Development (NRD) Division of Trade and Investment

2013	*Food Security Policy: For a Food Secure Marshall Islands*	Natural Resources & Development (NRD)
2013	*RMI NCD crisis response plan' - Towards a healthy RMI: Action Plan 2013-2018*	Health and Human Services (MOH)
2014	*Rules and regulations of the public school system* (with proposed 2017 updates on food services provision)	Ministry of Education
2014	*National strategic plan 2015–2017*	Economic Policy, Planning and Statistics Office (EPPSO)
2014	*"Be Marshallese, Buy Marshallese" policy* (and national campaign)	Natural Resources and Development (NRD), now MNRC
2016	*National wellness policy*	Health and Human Services (MOH)
2016	*NCD community action strategic plan, 2017-2019*	Health and Human Services (MOH)
2016	*RMI national diabetes management guidelines 2016*	Health and Human Services (MOH)
2016	*National gender mainstreaming policy*	Culture and Interior Ministry
2016	*Youth service corps act 2016*	Culture and Interior Ministry
2016	*Agenda 2020: A framework for progress*	Office of the Chief Secretary (with president and cabinet)

Space does not permit a detailed analysis of each policy or plan here. But a few highlights are worth noting. The 2013 Food Security Policy, for example, is largely devoted to food and nutrition security including discussion of agriculture development. Among key points in the Food Security Policy three in particular are important with respect to reducing import dependency and increasing national production. They are:

Strategy 1.1: Support local food crop production through extending knowledge and skills in better husbandry practices and farming systems.

Strategy 1.2: Increase the focus of government extension support provided for growing traditional staple crops.

Strategy 1.6: Give high priority to development of robust domestic food supply chains.

A food security committee under leadership of NRD in close cooperation with MOH and EPPSO was to be responsible for establishing the M&E framework and preparing regular policy implementation reports. The policy was to be subject to a mid-term evaluation no later than three years after its endorsement by congress (for more details see: RMI, October 2013, pp. 8, 19). The existing food security policy is strong in principle with a good foundation to build on towards reducing import dependency and better supporting local crops. The national strategic plan 2015–2017 also reinforced the importance of the food security policy and related actions (RMI, June 2014, pp. 56-60). However, it is unclear if the proposed evaluation has been done and if so what the results were or follow-up has been.

The NCD community action strategic plan, 2017-2019 coordinated by the Ministry of Health is another important document. Strategy 1 is “Provide support to increase access to healthy foods and beverages.” This is reinforced by the RMI national diabetes management guidelines 2016 which also suggest the need to advocate policies that include “increased price of unhealthy foods…” (see p. 9). Another example is the new youth service corps act 2016 which includes reference to a new youth corps (soon to be hired) mandated to (among other things) help in “planting of native food plants, including replacements of senile coconuts.”

However, not all policies or plans have clear mechanisms in place to evaluate impacts or outcomes on FNS. Linkages among policies may not be clear while intentions of some could conflict with others and could either enable or deter local agriculture development or FNS outcomes. A more detailed mapping and analysis of all FNS or agriculture related policies, laws and linkages across all ministries and agendas would be useful.

Selected FNS or agriculture related projects and programmes

Various FNS or agriculture related projects and programmes have been led by government or NGOs, often with external donor funding, or through past or ongoing activities of the NRD or NRC Ministry (recently renamed NRC for "Commerce"), through its regular budget; and technical support from the Taiwan technical mission and CMI. This has likely amounted to several millions of dollars in direct or project spending over the past decade or more.

As shown in Table 2 below, recent project or programme related activities implicating agriculture and FNS include, for example, a learning garden programme housed in the Ministry of Education, and school feeding programmes, also of the education ministry which has collaborated with the health ministry and NGOs such as the Wellness Center on food safety. There have been references to school gardens in various reports historically. But most such well-meaning or innovative activities appear not to have been substantially invested in, and were not well-documented or assessed either by the government, partners or donors. Some site visits during the December 2017 field mission, for example, revealed several school gardens not well cared for and normally without a dedicated school coordinator or manager.

Or if relevant documents do exist, follow-up interviews, emails, archive searches (e.g. of CMI) or further visits are required. Some documents may also be in the Chinese language for the Taiwan mission not accessible without translation. But overall there is no central registry or database of projects to which all government departments would provide summaries and deposit copies of relevant project documents or impact evaluations which could be very useful for future planning. Further research is needed to systematically collect and archive project data. One intention from the office of the chief secretary (responsible for coordination of policies and programmes across all ministries or government departments, as well as liaison with cabinet and the president) is to establish such a project database. This could be expected to begin sometime in 2018. A brief summary of available information on recent projects follows.

Table 2. Selected recent projects or programmes

Dates	**Project and donor**	**Implementing ministry or civil society partner**
2010-2013	*Social protection of the vulnerable in Pacific countries: Coconut regeneration and employment project,* including cash for work (coconut replanting) ADB, financed by JFPR grant number 9151	Ministry of Finance and MNRD Awards granted to five local governments to stimulate employment, promote food security, and mitigate climate change
2017-2018	*"One house one garden project"*	Majuro Atoll local government

	UNDP–GEF small grant	(MALGOV) and RMI mayors' council
2017-2021	*MIOFA's five year strategic plan for food security 2017–2021*. IFAD annual small grant subject to review over three years	MIOFA with initial endorsement from NRD Ministry
2018-2020	*Project to implement recommendations arising from integrated child health and nutrition survey 2017* WB and UNICEF	MOH ministry (with office of the chief secretary)
2018	*Forest inventory and analysis RMI* Micronesia Conservation Trust and the US Forest Service	MNRC

FNS agriculture related empirical data

Gathering empirical data from government or other sources is not easy since some types of data have not yet been systematically collected. Other material is hidden in various un-published reports with no current database that collects or archives all statistical, qualitative or standardised and comparable agri-food system information. Some existing data also appears contradictory while sources are sometimes not clear or may not be reliable even if cited.

One major national assessment (for the environment) pointed to a similar challenge in conducting research to produce the recent SOE Report 2016. That report noted a major problem was “compiling and processing data held by various departments, agencies and ministries.” One key recommendation for future work was to build off the baseline data collected from the SOE Report to develop a monitoring system to fill data gaps. It also suggested the need for a data storage system to allow intra- and inter-department/ministry analysis and data sharing for the SOE and other reporting processes, including those to multilateral environmental agreements (SPREP, 2016, p. 144).

Below is a summary of what can be gleaned from some useful national reports or a few large well-funded studies such as the SOE Report and the Integrated Child Health and Nutrition Survey (ICHNS 2017) results of a RMI health ministry-UNICEF study (RMI-MOH, EPPSO, and UNICEF, November 2017). The summary also draws from global databases such as WB indicators (relying on spotty reported national data not been recently updated) as well as a few small surveys, NGO reports and academic studies with limited findings.

Some regional studies and action plans on NCDs in the Pacific, for example, have suggested that 80% of RMI population (2014 data) was overweight or obese which created high levels of risk factors inevitably leading to deteriorating health and living standards. That study noted 27% of the RMI population (20-70 years) had diabetes (using STEPS survey and WB indicators) which posed large but preventable costs on individuals and the economy. The Pacific Roadmap Actions called for a multi-sectoral (and “whole of government”) approach particularly revising tax policies to discourage unhealthy product consumption (Pacific Forum Economic Finance Ministers, 2014, pp. 2, 8, 10, 13, 18, 99).

With respect to NCDs in the RMI, other data suggested diabetes prevalence (in 2012) was 19.6%, motivating the then president to issue a state of health emergency declaration (29 October 2012) of an NCD epidemic. He established an NCD task force to provide strategic direction and expert advice. The action plan included a focus on: food safety and salt reduction; strengthening food control system policy and legislation enforcement; and strengthening community action for schools, workplaces, churches and villages (Republic of the Marshall Islands, 2013/2017, p. 10). Some useful policies and related programme initiatives have been undertaken since 2012, and there appears to be modest progress in some areas, but NCDs are still a serious problem.

Some general data collected and analysed since 2012 by the Ministry of Health through community surveys and patient records is useful regarding NCDs, particularly diabetes,

overweight and obesity prevalence. Diabetes has been number one among the leading causes of mortality in 2016 for RMI with the diabetes mortality rate – 480 deaths (in 2014) and then 429 (in 2015), ostensibly showing some improvement in the past year, but remaining a significant national health problem. Youth overweight and obesity prevalence was 26.5% in 2016 but this was the first year the health ministry measured it and more data is needed on the problem as a whole (RMI Ministry of Health, 2016, p. 2).

On the other hand, there was an alarming prevalence of underweight in children (to 5 years old) indicated in one community survey while overweight was negligible at 1%. The report suggested: "Children become underweight through lack of enough high-quality food and… illness…. (while) "prolonged underweight in children leads to stunting… and that 35% of children 48-59 months (noted in 2017 ICHNS) were stunted… considered by the World Health Organization (WHO) to be in the severe range…. It said: "overweight is usually caused by getting too much food, especially junk foods such as soft drinks, ramen, and processed meats (while) overweight children… (are) more likely to become overweight adults with NCDs…." (Office of Health Planning, Policy, Preparedness & Epidemiology, August 2017, p. 22).

Reliable and relevant FNS data comes from the Integrated Child Health and Nutrition Survey (ICHNS) 2017, focused primarily on under 5 years of age cohort and mothers/caregivers. In summary the study, based on fieldwork conducted from April to June 2017, was:

- The most comprehensive nutrition assessment ever conducted in RMI to date;
- Provided statistically representative data for urban and rural areas;
- Utilised a sample size of 600 detailed household surveys;
- Assessed current nutrition status in RMI of both children under 5 years of age and their caregivers (mostly women);
- Examined both wealth and household food security;
- Identified nutrition status shortfalls with the goal of using the data collected to better inform policy and programmatic action with targeting of the most vulnerable.

(RMI-MOH, EPPSO, and UNICEF, 2017; or alternatively, ICHNS 2017).

Key findings from the ICHNS 2017 and other studies or data sets are reviewed below, but some data may require further validation through additional comparative research or field testing.

Nutrition and child health data

Poor child feeding and care practices in RMI were associated with child stunting (35.3% moderate to severe, or 10% severe) and that children under 5 years were not receiving adequate nutrition or foods or the right kinds for healthy diets and growth. Some 72% of non-pregnant mothers (15-49 years) were overweight and 45% obese, in part due to consuming too much of the wrong types of non-nutritious foods (RMI-MOH, EPPSO, and UNICEF, 2017, pp. vi, viii).

Consumption of high-calorie, low-nutrient density foods was high among all children under 5 years of age. Consumption of sugar-sweetened beverages was associated with higher prevalence of stunting (40.5%). Consumption of junk foods, including sugar-sweetened beverages, sugary foods such as cakes, cookies and candy, and fried fatty foods was associated with higher prevalence of stunting (39.3%) compared to children (27.7%) who did not consume these foods (MOH, EPPSO, and UNICEF, 2017, pp. 116-117).

Household food security data

The RMI Food Security Policy, 2013, quoting a World Food Summit 2009 declaration, asserted that "Food security exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life." The ICHNS 2017 did not provide a clear definition or adequate indicators on how food security or insecurity was measured so some data needs further clarification, contextualisation and analysis. However, the report noted that just 59.8% of surveyed households were food secure, 7% mildly food insecure; 13.4% moderately food insecure and 19.7% severely food insecure (RMI-MOH, EPPSO and UNICEF, 2017, p. v). Essentially, almost half of the surveyed population, i.e. households with children under 5 years of age, did not have enough food or nutrition of the right kinds to meet their basic needs.

Agriculture, food production or harvesting data including national census 2011

The household surveys from ICHNS 2017 provided useful albeit limited data for understanding agriculture production and fisheries in RMI. Table HH.7: Household and personal asset noted in particular that just 9% of households own agricultural land (with urban residents at 4.9% and rural dwellers at 25.8% (RMI-MOH, EPPSO and UNICEF, 2017, p. 20). At the same time, 26.2% own farm animals or livestock of some kind (typically chickens of pigs) including 16.1% of the urban population surveyed and 67.8% of rural dwellers. In terms of fishing gear, a total of 4,435 surveyed owned some (urban 37.6% and rural 72.1%). The ICHNS 2017 report, however, did not focus on agriculture, fisheries, land use, food production, harvesting or processing.

The only common (but limited and dated) nation-wide data on agriculture and fisheries so far comes from the 2011 census. That census indicated only a small majority of households (52%) were engaged in raising crops. Among them, 42.2% grew them for subsistence; 10.2% for both income and subsistence; and 0.2% for income. The second most noted popular agricultural activity was fishing among 3,787 households primarily for subsistence purposes (64.1%) with 34.8% noting fishing for both subsistence and income but only 1.1% noting it as the main means of income. The majority of the households reporting agriculture related activities were for fishing (53%), raising livestock (61%), and making copra (89%) with no information about crop types, other production systems or related incomes for each sub-sector (extracted from Figure 11.14 and Figure 11.15, in RMI and SCP, 2012). The census also aimed to assess some household crop growing, livestock management and production or processing, and income generation from agriculture practices. These included a few yes/no questions related to copra making, fishing,

fruit tree ownership and specific tree and vegetable or root crops (RMI and SCP, 2012, p. 532). However, questionnaire data is not available in the published census.

To supplement and improve standard national census data, a more systematic quantitative and qualitative review and assessment would be useful, particularly a more comprehensive agriculture census to provide a current, detailed, and crop or commodity specific update. Much more research is needed to understand how RMI households grow, harvest, slaughter, render, or consume local plant, animal and fish products.

Economic data on agriculture and fisheries (2012-2017)

Other data sources specifically related to agriculture and related employment or economic data are limited, confusing, and may not be fully reliable. WB statistics (some presumably using 2011 census data as well as other sources since) are worth noting to begin.

Regarding agriculture, value added (% of GDP), the WB indictors note:

- 21.82 (2012 data – peak);
- 15.765 (2011 data – presumably from national 2011 census);
- 14.699% (2015 data – decline).

Regarding agricultural land (% of land area), 2014 data WB indicators show:

- 63.889 (2014 data);
- permanent crops 31.2%;
- permanent pasture 11.7%.

Regarding arable land (% of land area) for crop production, WB indicators show:

- 11.111% (2014 data).

Regarding employment in agriculture (% of total employment), WB indicators show:

- 26.64% male and 7.88% female (1999 data only);
- Totals 21% (1999), 7.21% (from 2009 data), 11% total (2010) - Shows decline in agriculture employment (from WB indicators, RMI estimates see: https://data.worldbank.org/indicator/AG.LND.AGRI.K2?locations=MH&view=chart

The WB data shows a significant decline in agriculture related employment overall in the two decades from 1999 to 2009, while its contribution to the national GDP fell markedly from 20% to 2012 to just around 15% in 2015. But some WB figures may also not be comparable with some from other studies. WB data appears to conflict with 2011 census data about agriculture as well as figures cited in other government or agency reports. RMI's national trade policy document, for example, suggested agriculture's contribution to GDP "decreased from 4.5% in 1997 to 3.5% in 2010, while the contribution of fisheries increased from 4.5% to 10.8% over the same period" (RMI, May 2012, p. 51).

Other global databases, such as FAOSTAT, provide little information about RMI indicators for FNS. Across each of five important categories (food access, food utilisation, prevalence of undernourishment, production, and value of food imports over total merchandise exports), the FAO posted "no data available" online (see: http://www.fao.org/faostat/en/#country/127).

Differing from posted WB figures, the independent RMI economic report noted agriculture made a "negligible" (not defined) contribution to the national economy while it was an "insignificant" employer (EconMAP, 2017, p. 15). Yet another study suggested agriculture in 2016 accounted for only about 4% of GDP (unclear if this was 2016 data at the time of report writing) in the RMI (Leenders, Holland and Taylor, February 2017, p. 24).

However, where the primary sources for much agriculture data from these various agencies or reports are, and what might be accurate even if collected, is not clear. There is a glaring need for reliable statistics, and a proper agriculture census to sort out economic, agronomic, FNS, social, environmental data in one place, with links to all sources and databases. A good analysis of such census data could also be very valuable in future planning.

Post-disaster needs assessment data (2015-2016) on agriculture

Agriculture is an especially vulnerable sector to climate change impacts or disasters according to a post-disaster needs assessment of the 2015-2016 drought. The drought directly affected almost half the population, at least 21,000 people. Total economic losses had an estimated value of US$ 4.9 million. Decline in agriculture production and incomes (with associated food insecurity) followed while livestock was the single most affected sector. Total subsistence crop production amounted to 11.6% of expected production while some crops did not easily recover. Total monetary value of damage and loss to the crops and livestock sub-sector excluding the coconut or copra industry was US$ 1.8 million (Leenders, Holland and Taylor, 2017, pp. 25-28).

Import tax regime data

The current RMI national tax regime does not yet appear to provide any substantial disincentives to consumers to avoid purchase of unhealthy or non-nutritious food (some considered basics such as rice) or sugary drinks, although it has high so-called "sin taxes" such as taxes of up to 100% on tobacco (Table 3). For food and drink the following rates apply.

Table 3. Current RMI rates of import duty

(Extracted from data table provided by Ministry of Finance, Division of Customs, Treasury, and Revenue and Taxation (Nelles, personal communication, 21 December 2017).

General rate (with relevant exceptions impacting FNS below)	8%
Foodstuffs (basics) rice, flour, baby foods and drinks, carnation milk, and fresh milk, turkey parts, except turkey tail	0% rate
Tobacco, cigarettes	100%

Beer	50%
Wine	275%
Soft drinks (carbonated beverages)	0.01666%
Soft drinks (non-carbonated/artificially flavoured)	10%

One possible indirect (or delayed) response to the NCD crisis (2014 RMI finance ministers report and other discussions since) may be a recent bill for an act to amend the import duties act 1989 (48 MIRC chapter 2) intended to provide small portions of new tax revenues with funding supplement to CMI, Ministry of Health; and the public school system. Proposed new rates of import duty include: 30% on sweetened, sugary beverages, carbonated beverages and non-carbonated and artificially flavoured/powdered beverages as well as 30% on artificial juice.

Local government authorities have not yet regulated the sale of sugary drinks to discourage their consumption or (on the other hand) adequately encourage local products development, sale or procurement. There is currently (as of December 2017) some legislation proposed but not yet tabled to more effectively restrict the sale of sodas and sugary drinks near schools and during school hours. Food vendors contracted with the Ministry of Education to supply school lunches on certain days in some communities (there is no universal coverage) are also required to follow a menu plan which ostensibly provides a healthy meal with a mix of vegetables, fruits and water but no sodas or sugary drinks. However, more research would be useful to study implementation and impacts of such policies or interventions to see if they are adequate to address the NCD crisis in particular and what other measures may be needed.

Academic studies on FNS, agriculture and fisheries

Various independent academic studies on FNS, agriculture and fisheries have been done in RMI. Some quantitative and qualitative data is dated, but some critical issues and empirical findings reported remain policy relevant in 2018. For example, one large study in the early 2000s included a community-based survey involving 919 children aged 1 to 5 years showing that 59.9% of them had vitamin A deficiency with high risk of anaemia while another one third of these children had co-occurrence of vitamin A and iron deficiencies. At the time, it suggested a little over 15 years ago, that further investigation was needed to identify risk factors and evaluate interventions to address vitamin A and iron deficiencies among children (Palafox, *et al*. 2003).

By comparison, the ICHNS 2017 study noted only 54.4% of children aged 6-59 months had received vitamin A supplementation in the previous 6 months and only around 50% regularly (reported in the previous 24 hours of the survey) consumed vitamin A rich fruits and vegetables (RMI-MOH, EPPSO, and UNICEF, 2017, pp. vii-viii). At the same time, on a more positive note, it seems that around 75% were now consuming iron rich foods. So, while there may have been

some modest improvements in child feeding over the past 15 years, some similar challenges with respect to an adequate, nutritious diet remain.

Other useful social science studies over the past decade or more have attempted to understand dietary behaviour, including nutritional education interventions, cooking demonstrations, and taste-testing with food store customers to improve healthier food choices.

Some have suggested awareness about healthier options can change behaviour but food economics (not surprisingly), and food store profit margins affect shopping patterns, purchasing and dietary choices (Gittelsohn *et al.*, 2006). Accessibility to different food types (nutritious or otherwise) from stores or other community environments also affects food choice in the Marshall Islands as well as other isolated, low-income communities (Gittelsohn and Sharma, 2009).

Other research about climate change issues with implications for RMI in the broader Pacific region and agri-food system as a whole, has also suggested current or potential adverse effects on supplies of food from agriculture and fisheries; uncertainty about countries' future capacities to import and distribute food; and the ability of households to access or purchase and utilise sufficient, safe, and nutritious food at all times. Some food supply reliability may be related to a number of factors from rising sea levels, storms, coastal erosion, groundwater contamination, and increasing salinity or loss of agricultural lands. Greater ocean temperature fluctuations and shifting turbidity are also affecting fisheries. This makes current and future food production and harvesting, for both subsistence and commercial purposes, more uncertain with serious risks to food security and agri-food system livelihoods (Barnett, 2011).

Offices and agencies consulted for rapid scan

Table 4 gives an overview of the approximately 30 organisations that were consulted or visited during the 11-30 December mission to Majuro, including information interviews, informal conversations with government officials, development organisations, NGOs and private sector with visits to school gardens and farms.

Table 4. List of main organisations and types consulted

National government	**Civil society and farmer or fisher groups**
Economic Policy Planning and Statistics Office (EPPSO) Environmental Protection Agency (EPA) Marshall Islands Marine Resources Authority (MIMRA) Ministry of Culture and Internal Affairs Ministry of Education Ministry of Finance, Division of Customs and Treasury Ministry of Health & Human Services Ministry of Natural Resources & Development (or Commerce) National Training Council (NTC) Office of Environmental Policy and Planning Coordination (OEPPC Office of the Chief Secretary	Canvasback Wellness Center Marshall Islands Organic Farmers Association (MIOFA) Pacific Resources for Education and Learning (PREL) Women United Together in the Marshall Islands (WUTMI) Youth to Youth in Health
Local government	**International development organisations**
Majuro Atoll Local Government (MALGOV) RMI Mayors' Council	Asian Development Bank (ADB) International Organization for Migration (IOM) Taiwan Technical Mission in the Republic of the Marshall Islands

	United States Department of Agriculture, Rural Development United Nations Development Programme (UNDP)
Academic education and research College of the Marshall Islands (CMI) University of the South Pacific (USP)	**Private sector** Chamber of Commerce K&K Island Pride Supermarket Misco Market, “Be Marshallese, Buy Marshallese” campaign

The above list is not comprehensive of all relevant stakeholders who could have been or should be consulted in the future.

General observations and identified needs

It is impossible to adequately summarise the substantial amount of data gathered or potentially available from over 30 interviews and site visits or various policies and key reports gathered in a short period from a wide spectrum of actors among different levels of government, academia, NGOs, development agencies and the private sector. Nonetheless, a few observations about issues and challenges common or similar in many conversations are summarised below.

Existing pilot initiatives, best practices or good intentions

Several key FNS related interventions underway in RMI already appear to contribute to changing public attitudes and behaviour. Among these are some good or best practices that have up-scaling potential, or may be otherwise promising ideas, pilots and good intentions (but arguably still not best practices) that could be better supported, enhanced, tested, assessed, or further developed. They, for example, are:

- The innovative integrated program of the Canvasback Wellness Center NGO adjacent to the Majuro hospital and Marshall Islands Ministry of Health and Human Services which has since 2005 cooperated closely with the health ministry in design and delivery of preventive health care. The Wellness Center currently operates a cafeteria and hospital kitchen that serves nutritious food, some of it organic and locally grown on site. The Wellness Center manages a garden which has made very effective use of otherwise empty space (almost 5 acres in total) between various ministry or hospital offices or out-buildings. The gardens have supplied the cafeteria and hospital with some fresh herbs, fruits and produce for the past few years. The Wellness Center also does public awareness and outreach to support healthier lifestyles, diets and exercise. It also assists communities and the Ministry of Education with knowledge, skills and planting materials for home gardening and agriculture interventions to help combat diabetes and other NCDs, and food safety among school lunch vendors.

- A new learning garden programme led the Ministry of Education in early stages, with a coordinator recently hired, has significant potential to support greater knowledge and awareness of good food and nutrition if better integrated with the science, math and social sciences curriculum as well school lunches and food services. But a quick tour of some existing school gardens on Majuro Atoll showed that most of them lacked adequate or dedicated space, fencing and tools, and were not well designed or cared for with a few exceptions. Most schools seem to lack dedicated garden managers, teacher supervisors or resources (such as tools, seeds and fences) for gardens, while teachers often did not have adequate training or time and resources to support the gardens. Currently, there are tenuous links to the national curriculum or extra-curricular programmes which could be improved. There does not yet appear to be a system in place to evaluate the programme.

- The 2014 Be Marshallese, Buy Marshallese policy (referred to in RMI, 2016b, pp. 9-10). That policy has since inspired the “Be Marshallese, Buy Marshallese” (BMBM) national government campaign led by MNRC. BMBM campaign goals are: To increase sales of locally produced goods and services; to improve the productive capacity of the local producers with the view to assist in entering the export markets; to reduce import dependency; to encourage local production that will create niche markets for RMI products; to provide support combatting NCDs; to enhance overall economic and social well-being of RMI. If scaled up, and better linked to broader food and nutrition security initiatives while enhancing related value-added processing and market value chains (including crafts from agriculture by-products) the BMBM campaign could increase positive impacts, beyond what appears currently as a low-profile pilot activity.

- Local markets (different types) – Saturday market for Laura farmers facilitated by Taiwan technical mission; Misco Market in Majuro promoting “Be Marshallese, Buy Marshallese” campaign (with government produced posters in the store window); Farmers market direct (next to Ministry of Education) run solely or mostly by women.

- Inter-ministerial collaboration of several types: a) Teams (coordinated by culture and interior ministry) to bring planting materials and deliver services (from RND, health, Taiwan mission and others); b) Collaboration among health, education and other ministries with NGOs and academic institutions to support new school health and food safety regulations, linked to school feeding, school gardens, curriculum etc.; c) Collaboration across finance, health, education and other ministries and academic institutions on tax shifting to deter NCDs (bill tabled but not yet passed).

- NGO plans and externally funded projects such as the UNDP supported “One Home One Garden” project (just beginning for Laura community in Majuro, and an IFAD supported MIOFA initiative over 3 years (2017-2019) to provide community education, planting materials, technical assistance and training workshops on organic agriculture in Majuro and elsewhere.

- Established, long-standing technical assistance, research and extension programmes with external donor support (Taiwan technical mission and CMI land grant), but lacking public or external evaluations to adequately assess long-term impacts or to better coordinate planning and projects between or among these or other agencies.

Agronomic-marine, environmental and value-chain needs

Specific needs have been identified within the framework of this rapid scan which can contribute to the development of nutritious, culturally sensitive, environmentally sustainable local agricultural and fishery value chains. These are as detailed below.

- Need for more value-added processing, transport and marketing of specialised local agriculture or fisheries products, especially from Outer Islands to Majuro or for export. Currently the main SOE is for copra (coconut) oils, soaps, animal feed, compost material, and other by-products. However, there is significant potential for cultivation and processing of new plants, native species or products. Local, traditional and easy to grow foods such as breadfruit, taro, bananas, pandanus, papayas, sweet potato, pumpkin and other plants, fruits and foods can provide flours, cakes, pies, breads, oils or juices. Other products such as cucumber and tomato could be produced better, bring more incomes for local farmers, and are widely sought since many RMI citizens and expats want them due to a limited supply of mostly expensive imports.

- Need for salt tolerant, “climate smart” and drought-resistant seeds, plants or tree varieties, as well as technical support for their adoption, cultivation and harvesting, on Majuro Atoll especially in the Outer Islands. Some pilot testing is already underway through support from SPC as well as extension activities of the MNRC and CMI, Arrak campus land grant activities. But much more research is needed in RMI on specific crop varieties, localities, ecologies, etc.

- Need for local community nurseries and centres for local genetic resources conservation, seed saving and cuttings propagation (at least one for every island or major atoll) especially in conjunction with research, extension and learning activities for all ages. These could (depending on circumstances relevant to each island, atoll and local government) be connected or adjacent in community centres, municipal halls, parent-teacher associations and school gardens linked to national education policy and curriculum at all levels. They could also provide new rural employment generation while better encouraging greater food security at the local community level.

- The need for more dedicated space, fencing and tools for school gardens as well as a full-time care-taker and teacher coordinator assigned to care for and monitor gardens with support from parent-teacher committees for each school and district to increase the quality, quantity and variety of garden products that could potentially supplement school lunches or snacks. There is also a need for more comprehensive and systematic school garden planning with mandated lesson plans more clearly connected to the curriculum, based on national goals as well as pedagogical, nutritional, and local community needs.

- The need for a cost-benefit assessment analysis concerning multiple values of the RMI coconut and copra industry and what could be done for its long-term renewal and investment. Aside from fisheries coconut and copra is one of the few products (through processing for oil or other materials) that generates regular employment as well as some modest export revenues. Yet, the business is a heavily subsidised monopoly SOE. Some practices could be reviewed and reformed. However, hundreds of thousands of coconut trees across RMI are senile or declining in production and income potential. If RMI wishes to maintain copra as a priority industry many trees should be replaced. Aside from the industry’s economic contribution there are ecological values. Coconut

trees along the fragile and threatened coast lines can be important for erosion control, wind-breaks, soil protection, salinity prevention and climate mitigation while remnants of old or dead trees can be used for regeneration of soils or composting as new trees or different types can be planted adjacent. RMI could develop and implement a long-term national coconut regeneration plan, alongside intercropping with other tree types, vegetables or root species to improve soils and productivity and incomes.

Education, research, extension and technical support

The agricultural and fishery sector in RMI will not develop unless adequate investments are made in human resource development, education, training and research and in improving the physical infrastructure. The following identified needs should be considered.

- Need for technical support and human or financial resources for the Outer Islands in particular (especially in partnership with relevant national government authorities and the RMI mayors council). If future national FNS interventions are to succeed among a larger population with wider impact across the nation they must target activities and impacts beyond Majuro. A meeting with the RMI mayors council during the December 2017 mission raised this concern. Transport and communications to/from the Outer Islands and Majuro are also challenging with irregular air flights or boats to isolated and low density populated areas. There is no internet, email or even phone in some cases while radio is often a main form of communication. Future projects should be better designed and implemented in partnership with stakeholders in the Outer Islands.

- Need for improved and expanded extension services implemented by adequately educated and trained extension workers who can particularly serve the more remote Outer Island communities. The MNRC's hiring of a new group of 18 extension workers will be a good step. But to be most effective they should be part of an overall strategy and plan to strengthen and increase local agriculture production while improving food security. At the same time some extension agents may (hiring qualifications are not clear) require additional knowledge and skills training especially if they are without adequate higher education, field experience or technical expertise and (likely) not well-paid exposing them to attrition or lacking incentives for optimum job performance.

- Need for more and better TVETs across the agri-food system sector as a whole. This implies specific types of workforce training needs and priority sectors for skills development required for RMI to better adapt to the adverse effects of climate change. These include e.g. agriculture and traditional food preservation skills, aquaculture skills, and urban gardening skills (based on TVET workshop and assessment report cited in Jacot des Combes, August 2015, p. 13). But TVET as a whole could also be improved and expanded to provide ongoing support to extension workers as well as small business training for farmers and fishers to start and manage value-added agri-food system businesses.

- Need for more public awareness and education about the nutritional and food security values of traditional plants, native species such as breadfruit, taro, bananas, and pandanus and how to better include these as alternatives or significant supplements in local diets. Currently, diets are largely based on imported polished white rice or ramen noodle with some chicken, pork, beef or fish as well as processed canned foods and high sugar intake, but with few green or leafy vegetables normally provided in dishes or consumed. This type of diet currently provides inadequate nutrition and more susceptibility to NCDs. A common story shared by some interviewees is that many people in the Outer Islands especially (where they may run out of rice or other staples until the next boat shipment comes) say they have nothing to eat while breadfruit, bananas, and pandanus rot on the ground or root and tuber crops such as taro or sweet-potato may be still be available or easily cultivated but are ignored.

- Need for more agronomic and social sciences research about FNS issues, but especially to understand (at the local community and family levels) principal causes of NCDs, poverty, malnutrition and poor income generation or adoption of value added processing of existing products. RMI currently lacks adequate research capacities to gather needed data on soils, crops or communities, or to study and analyse critical social, cultural or economic issues and food choice behaviour. New research is essential to understand impacts and scaling up potential of viable interventions, and current best practices. This should complement more agronomic, soil, plant and other technical studies.

Conclusions and recommendations

A number of existing RNI policies or strategies if fully implemented might better support local agricultural development and FNS while reducing dependency on food imports. In some areas policy can be improved or new initiatives undertaken. Consider the following recommendations.

1. Monitor, assess, strengthen and scale-up best practices (and good intentions) from recent initiatives. This could include new work to:

- Apply lessons learned from the current success of Canvasback Wellness Center and MOH to develop, scale-up and implement a national cross-sectoral education, communications and outreach programme on healthy diets and lifestyles linked to local gardens, schools and community health centres in Outer Islands.

- Assess NGO plans and externally funded projects such as the UNDP supported "One Home One Garden" project (just beginning for Laura community in Majuro, and an IFAD supported MIOFA initiative on organic agriculture in Majuro and elsewhere.

- Strengthen and study the new learning garden programme under the Ministry of Education to ensure it is better integrated with the curriculum, food services and coordinated with other ministries or related activities. Conduct participatory impact assessment research about and in school gardens nationwide in cooperation with universities or other organisations such as CMI or IFAD to document numbers and types of school gardens nationally and what types/varieties of food are grown, how much and their uses. Use the data to more effectively plan scaling up activities to increase local food production while improving student learning, nutrition and health.

2. Evaluate the implementation and impacts of the 2013 Food Security Policy (RMI, October 2013). That policy drafted by MNRD is still innovative and forward looking. It called for a food security committee led by MNRD with MOH and EPPSO to prepare regular reports while the policy was subject to a mid-term evaluation. A systematic and independent assessment still could be done in cooperation with CTA, IFAD, SPC, FAO and other agencies. Use the assessment to make updates reflecting new priorities and commitments of the current government or to better implement the current policy.

3. Design and conduct (with suitable donor collaboration) a full nationwide agriculture and food system census to collect and analyse economic, agronomic, social, environmental and value chain data in one place as was already recommended by the Pacific Regional Environment Programme (SPREP) State of the Environment Report 2016. This should adequately map all types of agronomic and environmental issues such as native crops, introduced species, soils, water catchments, arable land area, etc., as well as social, psychological, cultural, economic and local political issues associated with agriculture and its sustainability. Conduct household surveys with a full agriculture census to obtain good data on crops, numbers of home or kitchen gardens among the population (percentage of households), and what types/varieties of food or tree crops are grown, harvested and

cooked with associated dietary practices and value chains. Include school garden data in a complementary survey and an agri-food system value chain assessment linked to SDG reporting with results from MNRC led 2018 forest inventory and analysis supported by Micronesia conservation trust and US forest service.

4. Begin new long-term collaborative, participatory research in cooperation with national, regional and international agencies and academic institutions particularly concerning:

- The diverse barriers or constraints (cultural, economic, environmental, social, political, psychological, etc.) as well as incentives or enabling factors to healthier and more sustainable diets, agri-food systems, procurement and value chains. New work should particularly aim to better understand why much of the RMI population continues to consume unhealthy imported foods that contribute to NCDs and poverty, while many have abandoned traditional crops and cultivation practices.

- More interdisciplinary and cross-sectoral social science studies on household and consumer attitudes to food, diet, agriculture and home or community gardening practices as well as food consumption patterns.

5. Develop a clear cross-sectoral strategy and national plan to substantially increase local agriculture production and processing (value chain development), with measurable targets to encourage self-sufficiency with a focus on healthier diets and reduce food import dependency. Adequate government funding, private investment and donor support must be mobilised for successful implementation, monitoring and evaluation. Plan elements could include:

- More comprehensive and adequate tax measures to encourage (and subsidise) the production and consumption of healthier local or traditional foods. Some positive tax shifting through Ministry of Finance appears to have already begun (new bill tabled, but not yet passed) in relation to sugary drinks in collaboration with affected ministries and partners. Study potential for broader measures looking at the entire agri-food system and related value chains to better support local crops and small farmers which would also better protect local environments, address climate change, fight NCDs, and encourage domestic food security and reduce food imports.

- Improve marketing and value chains. Identify up to ten priority agroforestry, root-tuber, vegetable or medicinal-herbal products to pilot test (good for both FNS and income generation potential with small scale value added processing e.g. for flours, jams, chips, oils, dried fruits and juices). Focus mainly on branding unique RMI traditional crops suitable for the right ecological conditions, e.g. banana, breadfruit, cacao, cassava, lime (and other citrus) and pandanus for juices, as well as pumpkin, sweet potato, taro or other products for processing, drying and natural/ecological packaging. Provide adequate research, evaluation and technical support for agronomy as well as small business development. Such initiatives could be developed or piloted to reduce household costs or support increased incomes from value-added commodities. Pilots

could be linked to a “One Island One product” job creation and income generation strategy and the national BMBM current campaign.

- Improve capacities of governments, farmers, fishers and other groups through small business development knowledge, and skills training (new non-formal TVET opportunities as well as through formal curricula) to encourage more local products grown for food security first and (if there is surplus) second, to supply markets, and increase local farmer incomes while better supporting healthy local or national food sources and consumer choices for others. Measurable targets and indicators for desired quantity and quality outputs from priority crops and local food products should be identified to encourage national and self-sufficiency with healthier diets.

- Support a new long-term agricultural development strategy that contributes to disaster risk reduction (recommended in Leenders, *et al*. 2017, pp. 25-26).

- Draft and implement a new national government procurement policy to mandate (or at least strongly encourage) local, healthy agriculture and fisheries product sourcing from farm to table in all meals or snacks served at all government catered functions, cafeterias, restaurants or service contracting.

Finally, in follow-up to this paper, a joint CTA-IFAD-PIPSO-SPC project consultation and identification mission in 2018 is recommended in collaboration with interested government agencies, donors, private sector, NGOs, farmers and fishers to assess best entry points and partnerships for new strategic, cost-effective, coordinated and scalable, projects or programmes that contribute to the elaboration of the cross-sectoral national plan.

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The Technical Centre for Agricultural and Rural Cooperation (CTA) is a joint international institution of the African, Caribbean and Pacific (ACP) Group of States and the European Union (EU).

CTA operates under the framework of the Cotonou Agreement and is funded by the EU.

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