The agriculture–nutrition nexus in Kiribati

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CTA Technical Brief

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In a nutshell

- Kiribati is estimated to need 50% more food by 2030 to feed its growing population.
- Extreme weather conditions and rising sea levels threaten agricultural production and livelihoods.
- Overfishing and unregulated commercial development are reducing coastal fisheries and marine stocks: Sea cucumber, seaweed and tuna among others are becoming extinct.
- 25% of children under-5 are underweight; one of the major causes of childhood mortality.
- 38% of pregnant women, 31% of non-pregnant women and 42% of children under-5 are anaemic.
- 38% of men and 54% of women, 20 years and over, are obese.
- High dependency on imported foods is changing food tastes and reducing consumption of nutrient dense local foods e.g. giant taro, pandanus and fish.
- National policies and governance mechanisms exist, but programme implementation of government agencies, development partners and non-governmental organisations (NGOs) is uncoordinated.
- The National Codex Committee is the leading multi-sectoral body with responsibility for food and nutrition security.

Key recommendations

- Enhance multi-stakeholder coordination, joint planning and complementary implementation to create greater synergy.
- Increase resilience of local farming and fishing communities to the effects of climate change, taking account of the differences between atolls.
- Urgently address ineffective protection laws that contribute to the over-exploitation and unsustainable development of coastal fisheries and marine resources.
- Carefully plan and execute education campaigns and training programmes on agricultural and nutritional issues targeting specific age groups; specifically children under five and women of child-bearing age.
- Revive interest in traditional knowledge and preservation techniques to increase availability and consumption of nutritious, local foods and fish. A public-private-community based approach that is embedded in local customs should be adopted.
- Identify at least 5-10 priority nutrient dense commodities (crops and fish) and develop action plans in support of food and nutrition security, agribusiness and value chain development and income generation.

Kiribati is comprised of 33 islands; 32 atoll islands and one raised limestone island, Banaba. More than half of the population (approximately 113,000) live on the Tarawa Atoll. Coral reefs surround the island's shorelines, which has an oceanic exclusive economic zone of 3.5 million km^2. Most atolls are 2 km in width and not more than 6 metres above sea level (m.a.s.l), except Banaba, which stands at 81 m.a.s.l. Soils are calcareous, porous, alkaline and unsuited to intensive agriculture. An estimated 80% of the population primarily live a subsistence lifestyle.

For many generations, I-Kiribati – citizens of Kiribati – have relied on their traditional knowledge of the terrestrial and marine ecosystems, to live harmoniously with their challenging environmental conditions. Their diets were primarily based on what they grew and caught (inshore and offshore) and what they were able to process and store using traditional preservation and storage techniques; secretly guarded and practiced, mainly by women. Climate change and rising sea levels threaten their traditional agri-food production systems and ways of earning their livelihoods.

Malnutrition – both under and over-nutrition – is a growing health concern. Increased dependence on imported foodstuff, especially in the urban areas of South Tarawa and several outer islands, as well as population growth (approximately 2%) and increasing urbanisation, pose additional socio-economic, health and development challenges. Encouraging I-Kiribati to produce and consume more locally, nutrient-rich foods – fish, root crops, fruit and vegetables – needs a public-private-community-based approach that is embedded in local customs and provides the added value of ensuring sustainable sources of income for communities without further depleting the natural resource base.

"Reviving agriculture-food systems, whether through traditional or modern skills, can increase local consumption and income generation through the sale of surplus produce"

The policy and institutional framework

Several policy frameworks exist that support food and nutrition security but not implicitly. The Kiribati Development Plan (KDP) 2016-19 acknowledges that "improvements have been made in health, but non-communicable diseases (NCDs), child mortality, maternal mortality and tuberculosis remain problem areas." The KDP 2016-19 was preceded by the KDP 2012-2015, in which three of a total of six key performance areas – Economic Growth and Poverty Reduction, Health and Environment – reflected the concerns about the NCDs; diabetes, high blood pressure and heart diseases that stemmed from poor nutrition. As well as directing ministries programming, the KDPs serve as guides for mobilising financial and technical support from donors and development partners. 'Health' is the only key performance area from the previous KDP that is not on target. Some of the proposed strategies specified in the new KDP include strengthened implementation of the Foods Safety Act and establishment of foods standards to safeguard consumer health and safety.

Ministries with direct responsibilities for food and nutrition security are the Ministry of Environment, Lands and Agricultural Development (MELAD), the Ministry of Health and Medical Services (MHMS), the Ministry of Fisheries and Marine Resources Development (MFMRD) and the Ministry of Public Works and Utilities. However, food security and nutrition security are treated as separate issues by the different government ministries. The relevant divisions have separate and stand-alone mandates, portfolios, legislation and policies to address food and nutrition security. There are also separate instruments for human and financial resource allocations to support implementation at the national level. Although the Government of Kiribati is small with limited resources, there

is little collaboration among agencies, which if enhanced could contribute to saving costs and time for more effective policy and programme implementation.

MHMS struggles to address issues such as the double burden of malnutrition, which is negatively impacting the health and well-being of I-Kiribati. The National Health Strategic Plan (NHSP) 2016-19 heavily builds on the NHSP 2012-2015 as health indicators remained the same. The Strategic Plan 2016-19 emphasises "the importance of relationships, partnerships and inter-sectoral coordination and collaboration" for the effective delivery and attainment of the desired outcomes.

The Ministry of Health's operational plans identify two key target groups – infants and young children (undernourishment and anaemia), and adults (anaemia and obesity). The nutrition unit is tasked with enabling good nutrition and, therefore, good health among citizens so that they can contribute to the country's socioeconomic development and their improved quality of life. Breastfeeding and healthy eating initiatives are cornerstones. However, inadequate staff, scarce funding and insufficient capacity to involve other stakeholders reduce the effectiveness of the nutrition unit.

Between government ministries, development partners, donors, NGOs, church groups and local communities, there are about 50 recorded projects and programmes dealing in some way with food and nutrition. Collaboration is not the norm, resulting in duplication of efforts or overlap of initiatives. The Live & Learn community farm project has been identified as an international good practice.

Agriculture and fisheries

The 33 islands are widely spread in three groups: The Gilbert Group, the Phoenix Group and the Line Group. Over 90% of the country's population lives in the Gilbert Group, with more than 50% living in South Tarawa, which is also the capital and main urban centre. Terrestrial resources are extremely limited, including the freshwater collected in underground lenses. Soils are calcareous, porous, alkaline and unsuited to intensive agriculture. Fishing in lagoons for reef fish and shellfish, and near shore for tuna and other pelagic species, is mainly subsistence and small-scale.

People, land and ocean

- Total population: 112,400
- Rural population: 65,630
- Population economically active in agriculture: 10%
- Population living a primarily subsistence lifestyle: 80%
- Land area: 811 km^2
- Cultivated area: 310 km^2
- Forest area: 121.5 km^2
- Exclusive economic zone for fisheries: 3.5 million km^2

Changing weather patterns have disrupted fishing and are increasingly affecting local livelihoods and wellbeing. Climate change and rising sea levels threaten agricultural production by saltwater intrusion and by inundation. Saltwater infiltrates pits that tap into fresh water lenses and where for example giant taro, a local nutritious (nutrition-dense) staple of high cultural significance, is traditionally grown. Coconuts, breadfruit and pandanus cultivation and harvesting are affected when land is inundated during storm surges. In La Niña years, when droughts are more frequent, there is a decline in sales of coconut (and by extension copra), the main cash crop for about 55% of the population and the main export commodity. Coconut requires an annual rainfall of at least 1,000–1,500 mm. Many residential homes have relocated further inland because of high coastal erosion and seawater inundations.

The main fish exports are tuna, seaweed, and shark fins. Coastal fisheries and marine resources are under threat and many species' stocks (e.g. sea cucumber) in the wild are facing extinction. Over-fishing and unregulated extensive commercial fisheries development are key factors. The most threatened fisheries are those surrounding South Tarawa, and the outer islands. Several species e.g. sea cucumber and seaweed are also important sources of nutrients and

bioactive compounds with known medicinal properties, and can provide new market and income opportunities if stocks are better managed. Aquaculture farms produce milkfish, sea cucumber, clams and seaweed.

Food

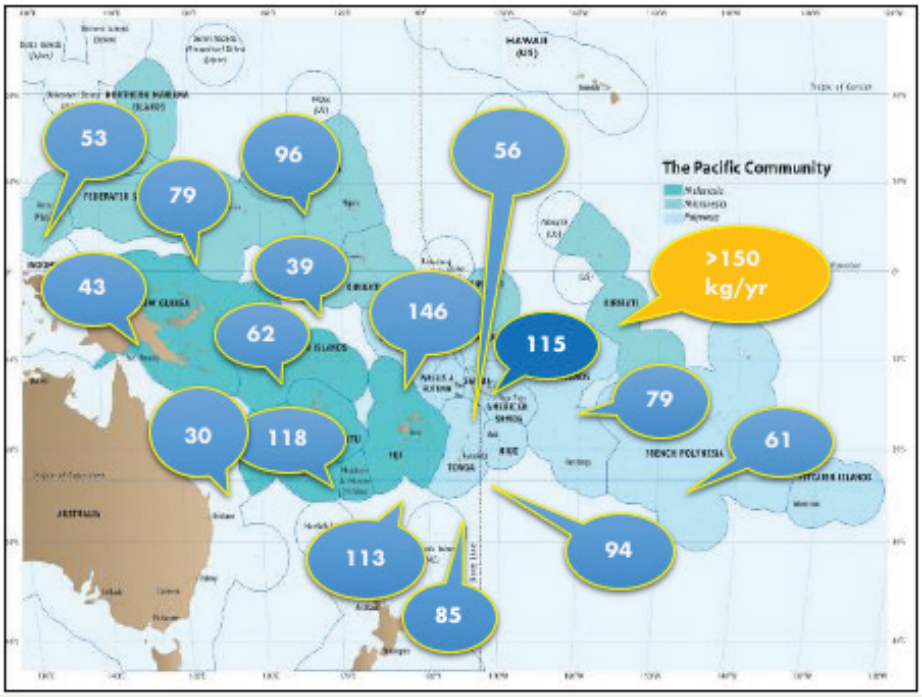
Traditionally, the ingredients that I-Kiribati – especially women – used for preparing food for their families were almost entirely sourced locally: fish, shellfish, pandanus, breadfruit, taro, coconut, wild fig, pumpkin, banana, sweet potato and pawpaw. Any surplus was processed (preserved e.g. dried) and stored using traditional postharvest handling methods. Local foods also have great cultural significance and play a major role in many celebrations. For example, some varieties of the giant taro are grown mainly for traditional ceremonies. I-Kiribati were seldom short of food, but this has changed.

Pandanus and breadfruit, although high in nutritive value and known to contain bioactive compounds with health and other benefits, are increasingly neglected: fruits go to waste. Children and adults increasingly prefer the taste of imported foods, and bread, rice, and sugary drinks have become more popular. Dietary diversity is poor, and many households now sell vegetables from their home gardens rather than eat them.

I-Kiribati still rely heavily on fish, as their main protein source (Figure 1). In fact, among Pacific Island countries Kiribati is the most dependent on seafood. However, as fish resources are increasingly depleted, local fish has become more expensive, and tinned fish and frozen chicken have been substituted. The MHMS acknowledges that fish is the healthiest source of protein in Kiribati and encourages people to fish as well as eat more fish. The growth in live reef food trade and sea cucumber fishery have caused over-exploitation, and this is worsened by the introduction of improved fishing gears and technologies. If over-exploitation and unsustainable commercial development of fisheries are not addressed urgently and at all levels – community and national – food and nutrition security of I-Kiribati will be further compromised.

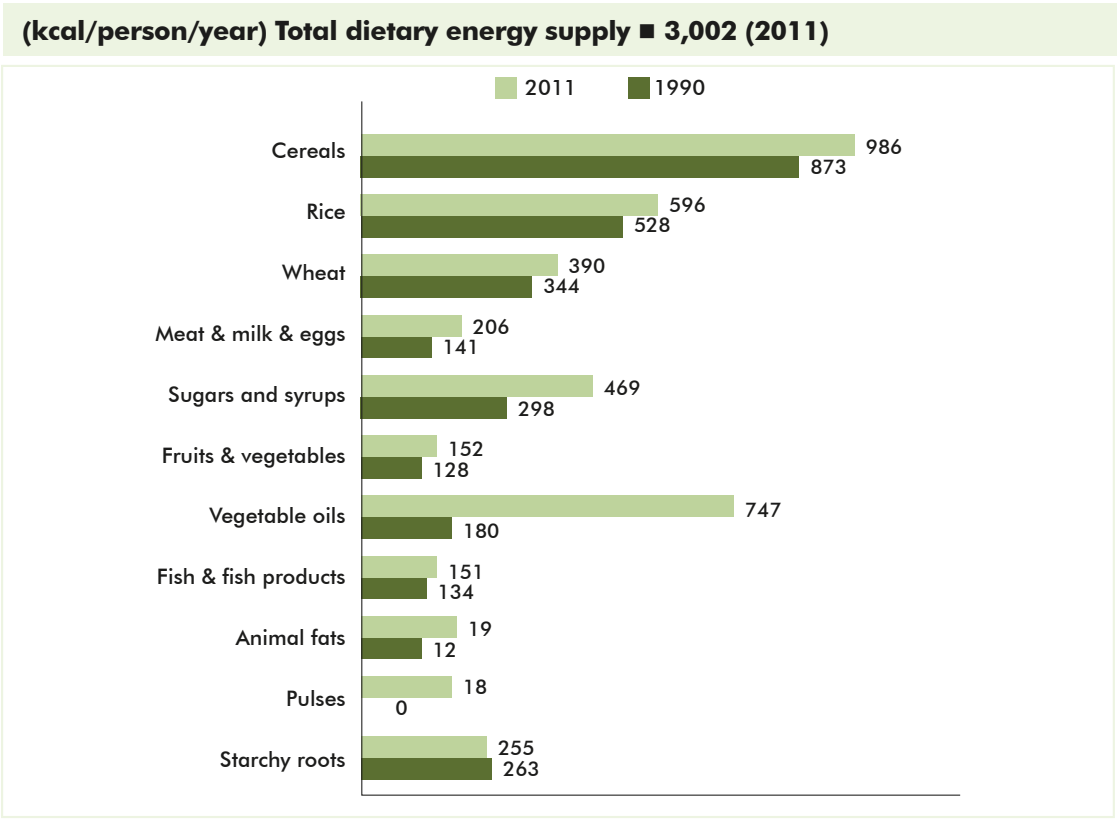
Weather Index Linked Parametric Crop Insurance (WILPCI) has been identified as a possible solution for reducing the losses for

Figure 1. Average consumption of seafood (grams/person) in the Pacific



Source: Government of Kiribati (2015). Fisheries division brief to the national stakeholders workshop on food and nutrition security in Kiribati. South Tarawa

Figure 2. Comparison of calorie food supply by food group between 1990 and 2011



Source: FAO 2014

smallholder farmers (and possibly fisherfolk) resulting from abnormal weather conditions, and for speeding up recovery post-disaster. Kiribati maintains its own weather data and shares data with a number of international and regional bodies improving the validity of the data. However, this data has not yet been linked to better managing weather-related risk in the agricultural (and fisheries) sector.

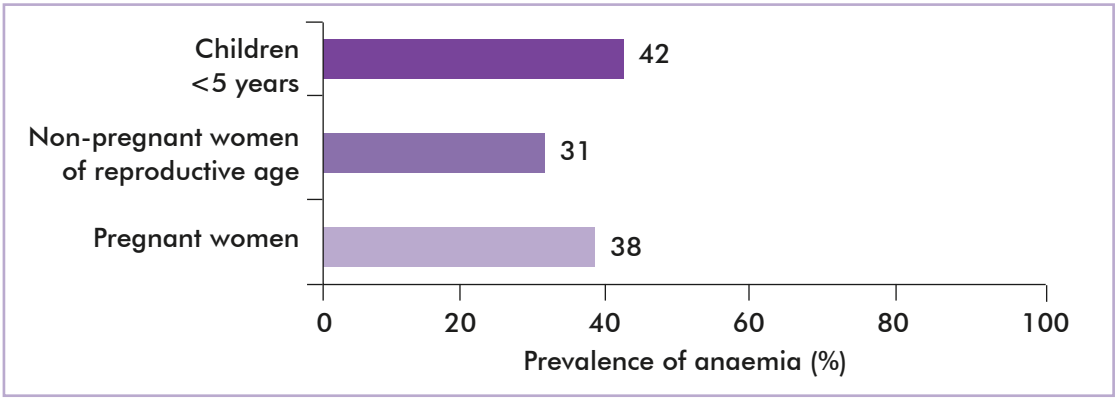
Nutrition

The supply of dietary energy, mainly in the form of oils, sugars and other carbohydrates, has grown between 1990 and 2011 (Figure 2). The adoption of westernised lifestyles and increased reliance on imported foods has negatively affected the health and nutrition status of I-Kiribati. Consumption of vegetable oils and oil crops has increased significantly, contributing 25% of the total dietary energy supply in 2011, demonstrating a major shift in intake from 180 to 747 kilocalories per person per year between 1990 and 2011. Sugars and syrups accounted for 16% and meat, milk and eggs for 7% of food energy respectively. While the under-5 mortality rate has reduced over a 10 year period (2005-2015), the prevalence of NCDs has increased and continues to rise.

Although malnutrition among children has declined, close to one-quarter of children under-5 years of age are underweight. In this age group, 15% of deaths are caused by under-nutrition and 3% by anaemia. In 2010, 22% of babies weighed less than 2,500g at birth.

As for adults, over 81% are critically overweight, a significant public health problem. 38% of men and 54% of women, 20 years of age and over, were obese in 2008. Almost three-quarters of the adult population have personal NCD risk factors (elevated blood pressure, smoking, insufficient exercise, and obesity). One in five adults suffers from diabetes, and one quarter of adults over the age of 25 are pre-diabetic or already under treatment for diabetes. Anaemia is high among pregnant women (38%) as well as non-pregnant women (31%) and severe among children under-5 (42%) (Figure 3).

Figure 3. Prevalence of anaemia in children under-5, pregnant women and non-pregnant women of reproductive age



Source: FAO 2014

Strengthening the agriculture–nutrition-income nexus

Complex economic, environmental, social, behavioural and geographical issues influence the agriculture-nutrition nexus as well as socio-economic development in Kiribati. The links between agriculture and fisheries and food, nutrition and livelihoods were historically strong but are increasingly fragile; especially under a changing climate. The erosion of traditional lifestyles, rising urbanisation, over-consumption of energy-dense foods, limited dietary diversity, over-fishing and the adverse effects of climate change are root causes of malnutrition; both childhood (under-5) under-nutrition and the obesity epidemic in adults. Often, the accessibility and cost of imported foods are more favourable than those of local nutrient dense food. For example, the cost of fresh fish is so high, especially during stormy weather, that tinned fish or other imported alternatives (frozen meats, chicken, sausage, etc.) are much cheaper. Strengthening the links between agriculture, nutrition and incomes (livelihoods) is a priority and the most effective way is through multi-sectoral collaboration and public-private-community multi-stakeholder innovation partnerships.

In this context, opportunities for strengthening the agriculture–nutrition-income nexus include:

- Improving inter-sectoral policy coordination and national economic development planning and implementation to address the food, nutrition and health challenges in Kiribati. The National Codex Committee can take a lead role and report directly to the Prime Minister and Cabinet.
- Prioritising at least 5-10 local nutrient-dense crops and fish in support of agricultural, agribusiness and value chain development and designing an action plan with clear targets and setting aside/mobilising dedicated funding.
- Fostering a close working collaboration between government agencies, donors/development partners, the private sector, NGOs, faith-based organisations and other stakeholders to train community leaders who can impart knowledge and skills in agriculture and nutrition and advocate for healthy diets and lifestyles, community engagement and income generation to revive and improve on traditional knowledge for producing and preserving local foods.
- Careful planning and execution of communication campaigns on agriculture and nutrition targeting specific age groups, with a focus on children under-5, school-aged children, women of child-bearing age and communities.
- Increasing resilience of local farming and fishing communities to the effects of climate change taking account of the differences between atolls. Weather risk insurance through public-private partnership can be further explored.
- Urgently addressing ineffective protection laws that contribute to the over-exploitation and unsustainable development of coastal fisheries and marine resources.

Good Practice

Live & Learn community farm

In rural areas of Kiribati, communities self-organise under a chairperson, usually an elder, a secretary, treasurer and representatives of village groups. The support and influence of these community structures are important in changing attitudes and behaviours.

A community-led approach that takes tradition and culture into account, generates solutions and collective action to deal with the problems is an international good practice. A successful example is the Live & Learn project, which helped the Ueen Tamoa community in Temaiku, a village in rural South Tarawa, to set up and run a community farm and home gardens. Though villagers sold most of the fruit and vegetables they grew to local consumers and supermarkets, people also used some themselves.

Two important reasons for the project's success were the good relationships between the project coordinator and the community, and the door the project opened for donors and the agriculture and health ministries to get involved and provide context-specific support as needed, as well as the possibility to scale up this successful approach.

Increasing Health and Incomes in Nanikaai Community

Building on good practice, the CTA/IFAD/PIPSO `Promoting Nutritious Food Systems in the Pacific Islands' project is providing seed funding to MELAD to scale-up the project "Sustainable Production of Fruits, Vegetables and Marine Resources for Increased Health and Incomes in Nanikaai Community." The community will establish small-scale gardens, improve water supply and nutrition awareness and knowledge and engage in small-scale marketing of crops and marine resources, for income generation. MELAD will work closely with MHMS and the Community.

By directly contributing to improving production, consumption and sale of local food crops and fish and enhancing incomes and nutrition at household and community level, the project will strengthen the agriculture-nutrition-income nexus and sustainable food systems.

Further reading

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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" (short project title: Promoting Nutritious Food Systems in the Pacific Islands) 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 programs – 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.

About the partners

IFAD
Investing in rural people

The International Fund for Agricultural Development (IFAD), a specialised agency of the United Nations, was established as an international financial institution in 1977 as one of the major outcomes of the 1974 World Food Conference.

PIPSO
Pacific Islands Private Sector Organisation

The Pacific Islands Private Sector Organization (PIPSO) is the premier private sector representative body in the Pacific Islands region. It was set-up through the mandate of the Forum Economic Ministers in 2005, and legally established in 2007, to be the representative body of the Pacific region's private sector. In doing so, it focuses its work on 4 key areas: Supporting National Private Sector Organizations (NPSOs) to be strong and responsive organisations; Assisting Pacific businesses to enhance their business competitiveness and growth; Championing the interests of private sector in the appropriate fora; and Ensuring the sustainability of PIPSO's resource and enhancing its capabilities.

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About the series

CTA Technical Briefs document experience and learning in topical issues of interest to the ACP agricultural development community. They are intended as a practical guide for people involved in an issue professionally or for people with a strong interest in the topic.

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