KIRIBATI AGRICULTURE STRATEGY

5-YEAR ACTION FRAMEWORK 2022 – 2026

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LIST OF ACRONYMS

AA	Agricultural Assistant
AAO	Assistant Agricultural Officer
AO	Agricultural Officer
ADB	Asian Development Bank
ACIAR	Australian Centre for International Agricultural Research
ASP	Agriculture Strategic Plan
ALD	Agriculture and Livestock Division
AF	Action Framework
BPH	Biosecurity and Plant Health Unit
CRP	Crop Research and Production Unit
CTA	Centre for Tropical Agriculture
DOA	Director of Agriculture
DDA	Deputy Director of Agriculture
ECD	Environment and Conservation Division
FAO	Food Agriculture Organization
GDP	Gross Domestic Product
GGGI	Global Green Growth Institute
GoK	Government of Kiribati
IC	Island Councils
IFAD	International Fund for Agricultural Development
ITE	Information, Training and Extension Unit
KAS	Kiribati Agriculture Strategy
KCMCL	Kiribati Copra Mill Company Limited
KDP	Kiribati Development Plan
KJIP	Kiribati Joint Implementation Plan
KOFA	Kiribati Organic Farmers Association
KV20	Kiribati 20 Year Vision
LDC	Least Developed Countries
LPAW	Livestock Production and Animal Welfare Unit
MELAD	Ministry of Environment, Lands and Agriculture Developments
NCD	Non-Communicable Disease
NAP	National Adaptation Plan
NDCs	Nationally Determined Contributions
NS	Nursery Staff
PAO	Principal Agricultural Officer
PIU	Project Implementation Unit
PPPO	Pacific Plant Protection Organization
SAO	Senior Agricultural Officer
SDGs	Sustainable Development Goals
SIDS	Small Island Developing States
SPC	Secretariat of the Pacific Community
SRF	Strategy Results Framework
SS	Stock Staff
TOC	Theory of Change
UN	United Nations
WB	World Bank

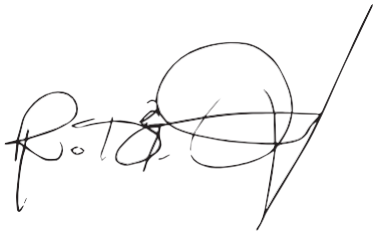
FOREWORD

Taking action in Agricultural Development is a key strategy for the development of sustainable livelihoods in Kiribati. Further, it is critical for maintaining the health of all I'Kiribati and building resilience against the impacts of climate change. In 2020 MELAD completed the Kiribati Agriculture Strategy (KAS) 2020-2030 as an addendum to the Kiribati 20 Year Vision (KV20). I now have the pleasure to launch this 5-Year Action Framework toward the delivery of that important Strategy.

This Action Framework was written and is owned by the Agriculture and Livestock Division of MELAD. The Framework was prepared through an extensive consultative process involving other stakeholders, including representatives of several line ministries, government institutions, donors and international development organizations, non-governmental organisations, the private sector and community groups.

This Action Framework will implement the seven objectives of the KAS. It is the core document framing annual work plans of the five Units of the ALD for the next 5 years. The Action Framework requires dedicated resources, time, and, moreover the spirit of commitment from all stakeholders.

I wish to thank the Senior Management Team and staff of my Ministry, including all stakeholders and parties that have contributed in one way or another, to the preparation of this Action Framework, **and in particular to New Zealand´s Ministry of Foreign Affairs and Trade (MFAT) and the Global Green Growth Institute (GGGI), for their financial support and technical leadership (respectively)**. We are united by the common goal to deliver results that have a direct benefit to all I'Kiribati, towards our combined endeavor in delivery of this Action Framework I wish you all 'Te Mauri, te Raoi ao te Tabomoa'.



Honourable Ruateki Tekaiara
Minister for Environment, Lands and Agriculture Development
March 2022

ACKNOWLEDGEMENTS

The success in the compilation of this Five-Year Action Framework was not possible without the support and commitment from key government ministries, including the Ministry of Information, Communication, and Transport (MCIT), Ministry of Commerce, Industry and Cooperative (MCIC), Ministry of Finance and Economic Planning (MFEP), Ministry of Internal Affairs (MIA), Ministry of Education (MOE), representatives from NGOs, and development partners (FAO, IFAD and GGGI). Staff from line ministries provided guidance and knowledge based on resource management and project proposals. Representatives from different members of NGOs provided additional thoughts which were incorporated into project concept notes (PCN). Representatives from donor partners delivered invaluable support through both financial and technical inputs during the development of this Action Framework. We acknowledge the financial assistance of the New Zealand Aid Programme through the Low Emissions Climate Resilient Development Activity, without whose support this Action Framework would have not been completed on time. We also acknowledge New Zealand's ongoing commitment to Agricultural Development in Kiribati and the Pacific Region.

Last but not least, to the Director, Deputy Director, Principal Agricultural Officer and all ALD staff; you have been at the forefront throughout the process of development of this Action Framework, from consultation to compilation. As such, this is your document, you own it. Through your busy schedules and work commitments, you have given your time and energy to produce this Framework. To all those who have contributed in one way or another "Kam rabwa ao kam aitatarika".

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BACKGROUND INFORMATION

The Kiribati Agriculture Strategy (KAS) is an addendum to the Kiribati 20 Year Vision (KV20) and is linked to other government policies, including the Kiribati Development Plan (KDP), MELAD Ministry Operational Plan (MOP), and the Kiribati Joint Implementation Plan (KJIP). The KAS aims to operationalize the implementation of the Government's national goals, policies, plans and priorities in the agriculture sector. The KAS is also aligned with the KV20 pillars relating to wealth, infrastructure and governance.

The KAS sets out to promote sustainable food production, improved nutrition and increase household income generation for all I'Kiribati. The KAS will implement measures to safeguard and revive traditional skills and knowledge; toward the overall outcome of a Secure, Safer and Peaceful Kiribati. . It will support the fulfillment of the following outcomes within the KDP, under Key Priority Areas (KPA) No 2: Economic Growth and Poverty Reduction and No 4: Environment; Outcome 1: Increased sustainable economic development and improved standards of living for all I-Kiribati and Outcome 2: Promotion of food and nutrition diversity. It will also support the fulfillment of the following strategies within the KJIP: Strategy 3: Strengthening and greening the private sector, including small to medium-sized enterprises, and Strategy 4: Increasing water and food security with integrated and sector-specific approaches and promoting healthy and resilient ecosystems.

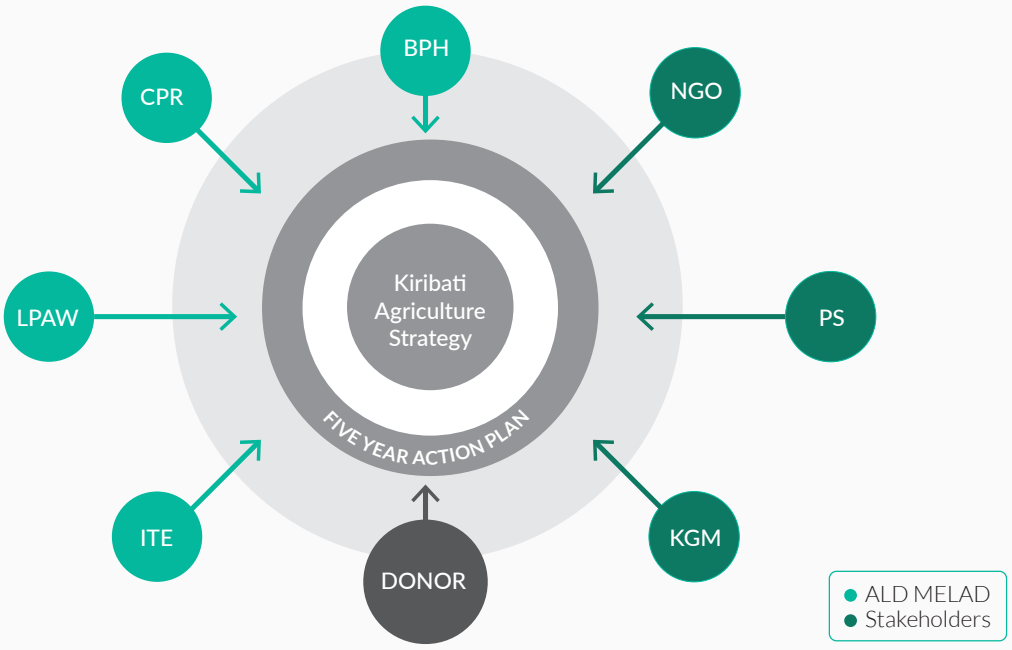
The driving force behind the KAS is its vision and mission statements; the purpose of this Action Framework is to deliver that vision.

VISION	MISSION
Household incomes, nutrition, health, food security and living standards in Kiribati are improved through increased domestic agricultural production and productivity.	To increase national and community engagement to raise agricultural production and productivity for household consumption, domestic markets and exports.

Source: Kiribati Agriculture Strategy 2020

KIRIBATI AGRICULTURE STRATEGY 5-YEAR ACTION FRAMEWORK 2022 TO 2026

FIGURE 1
5-Year Action Framework implementation map for delivery of the Kiribati Agriculture Strategy 2020-2030



This map is a visual representation of ALD's mission to increase national and community engagement to raise agricultural production and productivity for household consumption, domestic markets and exports. There are many partners in the delivery of the KAS; chief of these is the ALD made up of its five parts (in green) working in partnership with key stakeholders (in dark green). In recognition of their significant contribution to Agricultural Development in Kiribati, and ongoing importance to delivering the KAS, development partners are included in this map (in grey).

CHAPTER 1.

AGRICULTURAL SECTOR CONSTRAINTS ANALYSIS

1.1 Description of Kiribati Soil and Natural Resources

The soil in Kiribati is considered amongst the most infertile in the world, being young, shallow and alkaline, limiting conventional agricultural methods. Despite this, agriculture (along with forestry and fishing) contributed to 27% of the GDP of Kiribati and accounted for 59% of total employment in 2017 (ADB, 2019). In 2016, available agricultural land was 42% of the total land area compared to 53% in 1964. The Ministry of Environment, Lands and Agricultural Development (MELAD) is the government ministry responsible for the sector. The main food crops cultivated by growers both on South Tarawa and outer islands include coconuts (te nii), breadfruits (te mai), pandanus (te kaina), pumpkin (te baukin), wild fig (te bero), pawpaw (te bwabwaia), the banana (te bwanana), giant swamp taro (bwabwai), taro (te taororo), sweet potato (te kumara), cassava (te katiawa) to some extent Chinese cabbage (te kabiti n tiana), cucumber (te kukambwa), eggplant (te bwaingan), tomato (te tomwato), spinach (te tibiniti), water spinach (te kangkong), amaranth, (te mota), chaya (te tiaia), drumstick tree (te turam), bele (te nambere), purple and green false eranthemum (te iaroo and te iamaii).

The coconut tree is the single most important cash crop and the true “tree of life” for I-Kiribati. The opportunities for coconut production cannot be over emphasized. These include; income source for people in outer islands, a key source of food and drink, non-food products such as handicrafts, medicinal products, construction materials and so on (Persley, J.G. 1992). Along with seaweed, dried copra, coconut crude oil and copra cake remain the principal agricultural export commodities, and atolls are widely planted with coconut trees (FAO 2011). Copra accounts for about two-third of overall export revenue; and the Kiribati Copra Mill Company purchases this product from local farmers for additional processing and export. Production for copra in 2010 was 3,500 tonnes and had an export value of US$1.5 million.

Kiribati export copra, coconuts, seaweed and fish worldwide. In 2016 Kiribati exported products to Malaysia (33.8%), USA (21.18%), Fiji (14.87%), New Zealand (14.4%), Japan (4.3%) with the remainder going to Australia, France, Indonesia, Philippines, Singapore and others (World Bank-WITS, 2016 Export Product Report). Many households in outer islands are involved in subsistence agriculture. The country has developed a sustainable farming system based on the traditional method of cultivation of giant swamp taro (te bwabwai) in large pits excavated down to the freshwater lens. Such pits can be 10m to 20m in length and between 1m to 8m deep (depending on the depth of the water lens. The only agricultural livestock under production in Kiribati are pigs, chickens and a small population of ducks. These are usually raised under a more subsistence-type production system rather than large “commercial-scale” ventures, in large part due to the scale of the economy but also because of constraints to space, inputs and access to markets. Consequently, there are very few examples of true Agri-business in Kiribati. Some of these constraints are described in greater detail below. In partnership with the ALD the FAO and IFAD operate several livestock projects in Kiribati, including community activities aimed to enhance food security and bring about income generation for people living in outer islands. Dominant in the project agenda is enhancing coconut productivity and boosting pig and poultry production.

FIGURE 2
Map of Kiribati

Source: WorldAtlas.com

1.2 Challenges to Agriculture Development in Kiribati

Agriculture in Kiribati is faced with many issues and challenges that severely restrict crop and livestock production for exports, the domestic market and subsistence. The major issues and development challenges include but are not limited to:

1.2.1 Narrow based genetic resources

Like many other atoll countries, Kiribati has a limited range of plants suitable for agriculture to draw upon. Similarly, there are few animal breeds suited to conditions in Kiribati. Seeds are largely imported, and with the unreliable supply of viable seed, cuttings and other forms of propagation play a key role in maintaining production, but at the expense of opportunity to introduce new genetic material. Most imported vegetable seeds are not open-pollinated so there is going to be a continuous trend to import exotic vegetable seeds from foreign suppliers. The Biosecurity Unit of ALD controls the types and amounts of agricultural inputs that arrive in Kiribati – this includes plant materials, livestock breeds, as well as other inputs such as organic fertilizers, tools, and livestock feed. Notable prohibitions are on the imports of live pigs (PIFS, 2014).

Historically, ALD has also introduced goat and ducks breeds to increase diversity in production. Goat production, problematic from inception, disappeared in the 1990s while much of the duck production ceased during the 2008 outbreak of bird flu. Domestic duck production is now recovering and there is growing interest in poultry production generally, but it is a clear minority when compared to the popularity of keeping a pig and/or chickens at the household level. This is an area ALD can develop further by raising awareness of proper management of domestic farming ventures. ALD is serious about addressing the need for technical capacity in both plant and animal breeding. Naturally, caution is needed when introducing exotic breeds to ensure that the desirable traits of new stock are not deleterious to the long-established characteristics of local breeds. This includes tolerance to high ambient temperature, high variation in rainfall, high salinity and pH values. In any case, the genetic stock is the first part of a chain of improvements to be made, and once appropriate breeding programs are in place, other important factors such as proper housing and storage facilities for seeds, storage, processing and other components of the value chain need to be in place. The needs are very basic such as the simple construction of pig and poultry pens; provision of a safe storage facility to keep seeds in optimal conditions to preserve viability; or access to a proper storage facility to prolong shelf-life and quality of agriculture products post-harvest.

1.2.2 Land tenure system and land availability

The land tenure system is one factor limiting the productivity and development of agriculture in Kiribati. Despite having 42% of the total land available for agriculture in Kiribati, access is limited because of the land tenure system, which hinders private sector development.

In the Gilbert Islands Group, land is privately owned and is unevenly distributed among families. Individually owned land, including land which has been purchased, is registered in the name of the individual/s. Conversely, the atolls in the Phoenix and Line Islands are owned by the Government. Residents on Kiritimati atoll are required to lease land. The Government itself also leases land in South Tarawa and traditional landowners are unable to utilise their land for subsistence[7]. Much of the advantage of lease-hold arrangements in eastern Kiribati is tempered by the more challenging physical conditions in that part of the country. These have been limitations to broad scale cash crop development, not present in Kiribati, and have resulted in novel and innovative solutions to animal husbandry and horticulture to meet household demand (refer to Figure 3 below).

FIGURE 3
Innovative ways to grow vegetables in an intensive approach

Source: R.Craven 2021; K. John 2021

1.2.3 Poor soil physical, chemical and biological properties

It is predicted that land available for agriculture will be further reduced over time as coastal and low-lying land is lost due to increasing erosion and rising sea levels. Kiribati consists of small low-lying coral atolls, and the poor quality of its soil is a major constraint on agricultural production. The soils are shallow, calcareous, alkaline (basic) and coarse textured with low organic matter content, water holding capacity and fertility (Halavatau. S, 2018). While the soils are rich in calcium and magnesium content, deficiencies in nitrogen, phosphorus, potassium and micronutrients limit agricultural production (Kiribati National Statistics Office, 2018). However, some few places in Kiribati with old guano deposits, for example, Banaba Island, have elevated nitrogen and phosphorus levels (UNCDP, 2018). The physical suitability of available land to agriculture is a key constraint to increasing production.

1.2.4 Low water availability and poor quality for agriculture purposes

Kiribati has limited freshwater resources. Groundwater is the main source of water for agriculture, which is

exposed to saline water intrusion, particularly during droughts. In addition, overuse and a rise in the sea level result in saltwater contamination of groundwater resources. Seasonal rainfall as a source of water has become increasingly variable (CTA, 2019), with the northern islands receiving the maximum rainfall, while the southern islands tend to be the driest region. High water competition between people, livestock and crops is a daily dilemma faced by small scale agriculture farmers in Kiribati. The importance of water, the protection of the water lens, and measures to reduce the accumulation of nitrites need to be treated in every project activity. Water conservation technology or other innovations should be explored to mitigate this issue.

1.2.5 Reliance on imported food

The gap between the country's demand for foods and domestic food production means that the majority of food for human consumption must be imported. The supply of locally produced foods far exceeds demand. This increases its cost in local markets, in turn driving some to purchase cheaper imported foodstuffs. Combined then, low production and the high price of locally produced foods means that consumers have to rely on imported food of usually lower nutritional content, with its consequential health impacts.

Further, an absence of diversity in the market causes most people to consume similar food items. A factor to consider then is the specific preferences of farmers and customers. A farmer's preference for cash crops is very much focused on the market and includes things such as yield, hardiness, and weeks to harvest. Customers, on the other hand, have preferences based on taste, price and availability. These preferences drive demand.

The diminishing knowledge of local people about preserving traditional foods has affected the volume of domestic agriculture products available for purchase (Pacific Climate Change Science Program, 2011). While locally-produced food is sought after on occasion, variability in supply due to seasonality and processing time has resulted in imported food like white rice, plain flour, and raw sugar being in high demand by I-Kiribati due to their convenient preparation and abundance.

1.2.6 Agricultural support services

The agriculture sector is dominated by smallholder farmers producing at subsistence level; this is the dominant model for crop and livestock production in Kiribati (GoK, 2018). This results in a very limited number of "formal" Agri-businesses. Although smallholder farming can make a significant contribution to attaining food security and improving livelihoods, the smallholder sector is impeded by its limited access to agricultural inputs, information, technologies and markets. It lacks the scale required to meet local demand. Distances between the widely scattered islands and limitations to transport and communication systems restrict the capacity of the agriculture sector to adequately provide extension services and training to farmers and staff living in those areas (GoK, 2016). Only twenty-six Agriculture Extension workers, of which twenty-three are based in outer islands and three on South Tarawa, support the entire national agriculture development effort (MELAD, 2019). Production is limited to small-scale commercial production of poultry, vegetables and other farm produce for local markets (GoK, 2014). In the absence of a more enabling environment, commercial production and private sector development are limited. Furthermore, agri-processing and value addition remain largely underdeveloped due to low agricultural production, inadequate infrastructure, technological and policy support. Private sector involvement in the provision of support service is virtually non-existent, meaning MELAD have to fill this role single-handedly, and as shown above, MELAD have limited human resources available.

Past attempts to put subsidized systems in place have all failed from a range of factors from mismanagement and broken supply chains to funding bottle-necks and fraud. A further constraint is the narrow field of view for support services in Kiribati and the paucity of innovative thinking, slow uptake of new technology and low awareness of the range of solutions and options available to primary producers nowadays. This can be overcome by designing exciting training and capacity development actions that move beyond the conventional approaches to a stream of seemingly endless workshops and consultations.

A further need is to then make people aware of the support services available in the agriculture sector through an accessible and effective Communication Strategy. There are many perverse incentives for inadequate and inequitable distribution of information within the agriculture sector, not the least because of the limited capacity to deliver the support needed as already described in detail above. Additionally, the high cost of inputs in the agriculture sector, risk of crop failure, high post-harvest losses and low investment returns, diminishes any incentive for the private sector to come forward and deliver effective in-country support services. And so, the responsibility is returned to the resource constrained government sector and the problem is perpetuated.

FIGURE 4
"Hands on" agriculture training underway on South Tarawa, in this case grafting papaya

Source: R. Craven 2021

There could be a role to play for the newly established Kiribati Organic Farmers Association (KOFA). There have been a number of non-government actors in the agriculture sector in the past. They are usually characterized by the vulnerability of NGOs in Kiribati to finite project budgets and changes in leadership. KOFA is very new, with its constitution still under development, and the role it could play in the delivery of this Action Framework is uncertain. Until then, ALD will remain the focal national support services provider.

1.2.7 Transportation and marketing

Distribution of people living in Kiribati presents unique challenges, principally, the high cost of moving agriculture products from outer islands to markets on South Tarawa. There is a high risk of post-harvest loss (loss of quality) before the product reaches the market due to high temperatures, humidity and inadequate storage and handling. Mitigation solutions include processing the commodity to ensure longer self-life and quality is maintained, with the potential dual benefit of adding greater value to the product.

The unreliability of transportation to and from the outer islands also limits farmers' and traders' access to markets and causes wastage of agricultural produce and thus loss of farmers' incomes (SIDS, 2014). Some atolls in Kiribati are 3-4 days by ship from the marketplaces on South Tarawa. Simple measures, such as the appropriate processing of agricultural products, can add value and help sustain the supply of local produce from outer islands to South Tarawa.

Related to this is the provision of extension-services to producers in outer islands. When vegetable seeds are imported in large quantities, their shelf-life becomes a key factor. This is further exacerbated when the seed needs to be distributed and stored in remote places. Storage facilities need to be of sufficient quality to preserve seed viability. These are key factors in establishing a robust Agriculture Value Chain in Kiribati.

1.2.8 Climate change

Climate change and climate variability (including erratic rainfall patterns, increasing drought conditions, rising temperature and king tides pose substantial challenges for the country's agriculture sector (Pacific Climate Change Science Program, 2011). As extreme climate events are set to become more severe, their adverse impacts on agriculture will further amplify challenges associated with agricultural productivity and food security (GoK, 2014).

FIGURE 5
Market vendor on South Tarawa

Source: R. Craven 2021

Over the last eight decades, Kiribati experienced 13 major droughts, 5 major tropical cyclones and 4 extreme tide events, resulting in severe environmental and economic damage (DFAT, 2014). Changes in rain patterns and extreme weather events both cause flooding and drought, also reducing productivity, and increasing the incidence of food-borne diseases. To ensure the sustainability of the agriculture sector, future interventions in this sector will need to address climate change, climate variability and environmental risks in project design. ALD staff, including project designers and managers in the agriculture sector, are required to develop comprehensive Climate Smart Agricultural (CSA) projects and agricultural systems that effectively respond to Kiribati climate change impacts (sea level rise, coastal erosion and inundation of fresh water and by Ocean). In particular, consideration of water conservation and protection of water resources must be a priority. For example, there are direct links from variation in rainfall patterns and drought periods, to the need for water conservation, to the organic standards being promoted by the ALD and in turn the nitrogen cycle and accumulation of nitrites in the freshwater lens. These linkages need to be kept in mind when planning projects.

1.2.9 Erosion of traditional knowledge

Traditional knowledge for fishing, farming, and care for domestic and wild plants and animals in Kiribati has declined over time. There is an associated risk that when traditional knowledge on domesticating both crop and livestock breeding declines or is lost entirely, plant genetic materials and livestock breeds may also be in decline (*Crucible II Group, 2000)*. There is widespread anecdotal evidence that traditional forms of food preparation and preservation are largely unknown to young people, especially on South Tarawa. The result has been a decline in the application of traditional agriculture practices and corresponding per capita reduction in the consumption of traditional and locally produced foods. Today, all of the inhabited atolls in Kiribati are dependent on imported foods which, compared to local produce, are mostly inferior in nutritional quality. So, as described in greater above, loss of traditional knowledge about subsistence agriculture, diet, and food preparation has contributed to a rapid increase in the level of NCDs including diabetes, heart disease, stroke, obesity, dental disease, and cancer (*ALD, 2013*).

FIGURE 6
Impact of climate change (prolonged drought) on agriculture

Source: R. Craven 2021

1.2.10 Biosecurity threats

Given the already limited availability of domestic plants and animals available for production in Kiribati, biosecurity is an important consideration in relation to the introduction of commercially viable plants and animals for agricultural production. Given that agriculture development is likely to be concentrated on a select few of the most viable crops and livestock species, biosecurity threats will need to be carefully considered due to the potentially significant harm they can cause to crop and livestock production and in turn people's livelihoods. Invasive plant species, diseases and pests can easily find their way into Kiribati in many ways, such as trade, tourism, travellers, fishing boats, etc. The revival of agriculture in Kiribati must be supported by thorough research and phyto-sanitary regulations, effective border biosecurity control and protection.

1.2.11 Lack of agriculture financing support

Agriculture development in Kiribati operates through annual budget support from the Treasury largely in the form of salaries and operating costs of the ALD. Activity implementation is largely dependent upon finance sourced from development partner programs (usually of finite duration). There is a long history of practical support; at the time of the creation of the Agriculture and Livestock Division in the early 1970s, a set of garden tools which include: 1 bush knife, 1 crowbar, 1 spade, 1 shovel and 1 rake was sold to households at the subsidized price of AUD15.00. Coinciding with a national push to replace senescent coconut palms, the goal of the incentive scheme was to re-invigorate primary production. Since then, there has been a significant shift toward targeted support for individual entrepreneurs. Loan schemes are available, for example through the Development Bank of Kiribati (DBK) and these have their unique conditions and eligibility criteria. There is an urgent need to provide financial support services that are accessible and tailored, so that they are effective and respond to the unique needs of any particular subsistence producer or entrepreneur wanting to grow into an agri-business.

CHAPTER 2.

AGRICULTURE AND LIVESTOCK DIVISION SITUATIONAL ANALYSIS

2.1 Agriculture and Livestock Division Human Resources 2021

ALD-MELAD is comprised of five units; Crop Production and Research (CPR), Livestock Production and Animal Welfare (LPAW), Biosecurity and Plant Health (BPH), Information Training and Extension (ITE) and Policy and Legislation Development (PLD). The CPR focus function is planting materials collection, diversification and distribution to all island nurseries. The unit is currently staffed by one (1) Senior Agricultural Officer (SAO) and assisted by two (2) Agricultural Officer (AO), one (1) Agricultural Assistant and four (4) nursery staff (NS). The Biosecurity and Plant Health section is staffed by one (1) Senior Agricultural Officer (SAO) and assisted by 1 Agricultural Officer (AO) and three (3) Agricultural Assistants Officers (AA), The Livestock Production and Animal Welfare (LPAW) is staffed by one (1) Senior Agricultural Officer (SAO) and assisted by one (1) Agricultural Officer and 2 Assistant Agricultural Officers (AAO) with seven (7) Stock staff. The ITE section is currently staffed by one (1) Senior Agricultural Officer, two (2) Agricultural Officers, one (1) Assistant Agricultural Officer (AAO), 22 Agricultural Assistants (AA) and 22 Nursery Staff (NS). The Policy and Legislation Development is staffed by the Director of Agriculture (1), Deputy Director of Agriculture (1) and Principal Agricultural Officer (2).

TABLE 1
ALD Technical and Operational human resources disaggregated by gender

TITLE	CURRENT	FEMALE : MALE
Director of Agriculture	1	1:0
Deputy Director of Agriculture	1	1:0
Principal Agricultural Officer	2	1:1
Senior Agricultural Officers	5	4:1
Agricultural Officer	6	4:2
Assistant Agricultural Officer	5	2:3
Agricultural Assistant	24	10:14
Nursery Staff	26	0:26
Stock Staff	10	0:10
Total	**80**	**23:57**

2.2 Training and Extension Services Unit Situation Analysis

The ALD Information, Training and Extension Services can be more active. Their advisory services provide farmers with improved knowledge and the ability to apply new skills and techniques which in-turn boosts productivity. Provided primarily as a service to individual subsistence-type farmers, extension programs have been shown to increase household revenue, increase land and resource productivity, reduce poverty and improve the overall impact that agricultural activities have on the economy and rural communities. A strong program of extension services also provides a productive feedback loop between policy makers and farmers/practitioners, where real-time challenges can be identified, and innovation and research can be adapted to on-site needs. As climate change and trade disruptions place growing pressure on ALD's sector, extension services must evolve to address the needs of farmers as well as the environmental realities threatening their livelihoods. In time, it may be possible for ALD to outsource the delivery of specific training to trusted non-government providers with demonstrated experience in agriculture in Kiribati.

FIGURE 7
Delivery of horticulture training by ALD Staff, Antebuka, South Tarawa 2021

Source: R. Craven 2021

Learning in the agricultural sector is known to be dynamic with a blend of formal and informal sources playing a part in building expertise. ALD extension services have historically been provided by ALD officers, though many subsistence farmers exchange advice based on their personal practical experiences. Often this is with neighbours or family members with the same interest in small scale farming. Most small-scale farmers do not have their own capital or resources to make their farms more productive. Subsistence farmers in Kiribati usually find it difficult to access capital from lending institutions, such as the Development Bank of Kiribati (DBK), for their agricultural activities. This is a barrier to developing into an agri-business. Agri-business development training can be scaled up in the future. Several other gaps in ALD Training and Extension Services have been identified:

1. Stretched human resources within ALD (1 Technical Officer to 3,000 I' Kiribati) and a scarcity of technical experts to address the specific needs of different farmers;
2. Barriers to use of technology in the provision of services;
3. Incomplete feedback loops to inform policy or promote inclusive agricultural planning; and
4. Insufficient funding allocated for ALD to deliver their target programmes.

The purpose of this Action Framework is to increase the quantity and quality of agricultural extension services and explore the options for expanding access to extension services. In the first instance, support for the development of basic guidelines on crop and livestock production for current and future extension officers is needed. Officers would then be able to develop standardised training modules for farmers based on Climate Smart Agriculture initiatives for delivery. Alignment to markets, enhancing quality and maximising sustainable yield could be early targets.

FIGURE 8
Training is best when it is interactive, with participants actively engaged in the activity, and embraces use of available technologies

Source: R. Craven 2021

FIGURE 9
Advice being shared in the field in an urban horticulture setting

Source: T. Ioane 2020

2.3 Livestock Production and Animal Welfare Unit Situational Analysis

Apart from promoting animal welfare, the Livestock Production and Animal Welfare Unit within ALD supports poultry and pig farmers. Pig farms in Kiribati are quite small, ranging in size from one or two animals up to 10 or more. They are also subsistence models, as distinct from commercial enterprises. There is unlikely to be a strategic breeding system in place, or development of any given trait (taste, texture, yield, fat score). There are a very limited number of breeds under production and most are hybridised.

The scale of poultry farms is similarly small with a range from 5 to 10 laying birds to 200 to 300 birds. In the outer islands most households raise chickens in a free-range system. One of the single largest constraints to poultry production is the scarcity and, when it is available, high cost of imported feed. Currently, only one egg producer in Kiribati, apart from ALD itself, import their feed direct from overseas suppliers. The remaining nine egg producers identified rely on wholesalers to import their feed. High quality feed has been shown to directly affect egg quality and production, boosting production from 50% for those using local feed substitutes to 90% for producers using commercial feed.

High temperatures, humidity and insect pests also degrade stock feed. When commercial feed is available, high competition between the nine (9) egg producers on South Tarawa quickly depletes the supply. Ironically, the LPAW Unit within ALD can exacerbate shortage of stockfeed if they too have run short on feed and compete with primary producers for the survival of their own poultry herd. There are long lead times on the ALD procurement pathway for stockfeed, and it can take up to 6 months for a shipping container of feed to be delivered through the Government procurement pathway. Private businesses shorten these lead times considerably, taking as little as 6-8 weeks for an order to arrive, but requires significant capital, putting this option out of reach for most egg producers. There is significant potential to produce some stockfeed in Tarawa, where inputs from fish meal and residues from copra processing could form the bulk of a feedstock for poultry and pig production. Nutritional analysis would be needed to ensure the quality and availability of micro-nutrients. This is a fantastic opportunity for a private sector investment and would generate green jobs and have flow-on effects for the agricultural sector in Kiribati.

FIGURE 10
Egg production in Kiribati is highly dependent on availability of imported commercial feed

Source: R. Craven 2021

TABLE 2
Estimate livestock distribution and feed consumption demand

LIVESTOCK FARMERS	TOTAL NUMBER IN STOCK	FEED/DAY IN BAG OF 25KG	MONTHLY CONSUMPTION	PRICE OF FEED FOR A YEAR	PRICE OF FEED FOR 5 YEAR
1. ALD Tanaea					
1.1 Pig Parent breeder	23	2 bags	60 bags	$ 20,160	$ 100,800
1.2 Poultry Layer	210	2.5 bags	75 bags	$ 25,200	$ 126,000
1.3 Poultry 1 to 10 weeks old	1,300	5 bags	150 bags	$ 50,400	$ 252,000
1.4 Duck	85	2 bags	50 bags	$ 16,800	$ 84,000
2. Tetaua farm	**250**	**3 bags**	**90 bags**	**$ 30,240**	**$ 151,200**
3. Bwarerei	**150**	**2 bags**	**60 bags**	**$ 20,160**	**$ 100,800**
4. Wiite	**100**	**2 bags**	**60 bags**	**$ 20,160**	**$ 100,800**
5. Alik farm	**70**	**1.5 bags**	**40 bags**	**$ 13,440**	**$ 67,200**
6. Beero	**100**	**2 bags**	**60 bags**	**$ 20,160**	**$ 100,800**
7. Toki farm	**100**	**2 bags**	**60 bags**	**$ 20,160**	**$ 100,800**
8. Tabuaki farm	**100**	**2 bags**	**60 bags**	**$ 20,160**	**$ 100,800**
9. Barry	**50**	**1 bag**	**30 bags**	**$ 10,080**	**$ 50,400**
10. Others (5 to 10)	**50**	**1 bag**	**30 bags**	**$ 10,080**	**$ 50,400**
	As at Dec 2021		555 bags	$ 277,200	$ 1,386,000

FIGURE 11
Seedling stock at Temwaiku, South Tarawa. Seeds and seedlings are critical to sustained crop production

Source: R. Craven 2021

Overall, the demand for hen eggs on South Tarawa is very high and the domestic supply is very small. Table 2 above gives a brief summary of the scale of poultry and egg production in Kiribati. Imported eggs from Fiji, Australia and NZ are cheaper and larger than local eggs so consumers first buy imported eggs and resort to buying locally produced eggs if alternatives are unavailable. The domestic demand for chicken layers at the age of 10 to 15 weeks is very high and ALD cannot meet farmers' demand for birds at Point-of-lay. Incapacity to meet demand mimics that of availability of feed. This Action Framework will address the issue of feed shortage and inconsistence supply of both feed and laying birds.

2.4 Expected Impacts

It is anticipated that when this Action Framework is implemented by ALD's five units in harmony, there will be a continuous flow of fresh agricultural products from small scale agri-businesses to markets at South Tarawa and other per-urban centres such as Island Council Offices. Other impacts include there being a greater diversity of cash crops and livestock products being produced to meet a growing demand for local produce. Produce bearing the "local brand" would be sought out preferentially to imported alternatives. It is also anticipated that mindsets will slowly be influenced and, given time, entrepreneurs and subsistence farmers will see their small-scale farming activities as an opportunity for development into agri-businesses in terms of self-employment, income generation and the additional food and nutrition security that agri-business can bring. Over time entrepreneurs may hone their business skills, develop their farming enterprise as a genuine business and re-invest in their business. With a changing workforce, and until such time that Agriculture Support Services are outsourced, ALD staff themselves require training and capacity development activities too. An experienced, qualified and professional Agriculture and Livestock Division is catalytic to delivery of this Action Framework.

CHAPTER 3.

DEVELOPMENT OF THE 5-YEAR ACTION FRAMEWORK 2022-2026

3.1 The Process Pathway

This development of this 5-Year Action Framework is a collaborative effort through a number of consultations with relevant line government ministries, NGOs, private sectors, civil societies and support from partner agencies including the United Nations (UN), Food and Agriculture Organization (FAO), the International Fund for Agriculture Development (IFAD), the Green Global Growth Initiative (GGGI) and the South Pacific Community (SPC). The implementation of KAS will not be possible without the continuous support of ALD's multi-later and bi-lateral partners.

The Action Framework for the KAS is a tool to implement desired strategies and set plans in order to reach the main objectives set out by the KAS. The Action Framework is a pathway for checking the progress on the actions executed by each player who will contribute to reaching the objectives and to ensure that the impacts of the project are reaching the target beneficiaries.

3.2 Group consultation

The first consultation was undertaken with representatives from relevant line ministries, private sectors, NGOs, and civil societies who were also participated in the formulation of KAS. During the consultation, participants went through the objectives and outcome of the KAS and aligned with their own individual organization area where they can complement or add-value to ALD programme in relation to the over-all objective of increasing and sustaining supply of locally produced crop and livestock products for domestic markets and at the same time increase consumption of these products at household level.

Representatives from Kiribati Tourism Authority (KTA) shared their new vision and proposal that Agri-tourism should be one avenue for ALD to look into and commented that when tourist visited Kiribati, they prefer to eat local food. This idea was discussed and further improved by considering issues related to health and safety control measures from organic production through to service at the restaurant or hotels.

A representative from the NGO supported this point and commended there should be a body to enforce health and safe for local food produced and sold. Another point related to this was regarding the soaring prices of local agriculture products sold at stalls on the road side and also those that are carried around and sold at household by those who do the value added. He also pointed out that they are not just that expensive but the way they are presented or carried around from house to house, sometimes they do not attract consumers.

All participants agreed to this issue of providing training on value adding to local product and with emphasis on health and safety of both suppliers and consumers. It was also noted during this discussion that one of the good reasons for this local agriculture products to be very expensive was closely associated with the small volume and the timing when it is harvested. Most fruit like pandanus and breadfruit are seasonal and also most of the products sold are harvested from the wild so people do not own the trees so the demand to market the product to make money is there and this leads to high competition in harvesting breadfruit and pandanus which may contribute to the poor quality of local fruit sold at all domestic markets or at household. This is a challenge to ALD and key partners need to look into and find solutions.

Participants were grouped into 3 groups of 4 members each. Each group was tasked to prioritize the 20 project topics listed in the KAS. The priority should focus on issues already listed above and take into consideration the comparative advantage of ALD, donors, partners and key players. Participants were reminded that during their deliberations, they could not delete or add new topics since the 20 on the list have been endorsed by Cabinet. However, if they have new ones and they see it to be a burning issue that could add value to the KAS objectives, they can be accommodated in the Action Framework recommendations.

3.3 Outcome of group consultation

The conclusion of the participatory consultation with stakeholders and after presentation on the KA situational analysis the following was agreed to be reflected well in the Five Year Action Framework:

1. All the objectives and outputs provided in the KAS document should be reflected in the Five Year Action Framework and put into smart goals, strategic actions and specific actions developed with costing and time frame by the five sections of ALD.
2. Action Framework must reflect the need to improve, enhance and sustain the technical capacity of ALD officers in all agriculture related fields both technical and management in order to provide sound and quality advise on new technology and innovation to address farmer's problems on the field so that their productivity increase and sustain.
3. There is a need to explore other traditional crops grown and well adapted to Kiribati conditions like pandanus, breadfruit, babai, and banana to diversify outer islands' source of income for outer islands.
4. There is a need to establish gene-bank for vegetable crop and tree genetics for conservation, improvement and utilization
5. The need to establish proper storage facilities to conserve open pollinated vegetable seed and tissue culture.
6. There need to provide information on soil improvement technology and other useful resource information to increase farmers' productivity.
7. There is a high and urgent demand for livestock quality breed (local, improve and exotic) and feed to be readily available to support and sustain farmers who engaged in poultry, pig, and duck farming production.
8. The need to develop and share with farmers simple management on livestock and to develop low-cost dry-litre pens.
9. The support to the programme on animal health and other initiatives that promote domestic animal and pet welfare in Kiribati.
10. The need to established and support cooperative for all farmers engaged in agriculture activities so that they are functioned and provide assistance to the marketing process and business development with members.
11. The need to identify local crops and to develop a protocol or simple procedures on value adding or food processing, packaging and marketing.
12. The need to keep and protect Kiribati environment safe and free from animal and plant pest and diseases is very important and critical so the biosecurity facilities at all entry boarder and main office should be upgraded, improved and maintained.

3.4 Individual consultation with ALD senior officers

A direct visit to each of the Head of Section and some senior officers within ALD. It was noted that 80% of the staff consulted expressed that they were involved or contributed to the formulation of KAS but since then, they have never seen it or read it. However, it was also noted from reading their individual work plan, the objective and programme highlighted in KAS are well defined. AS noted well during the consultation of KAS that it is going to replace the ASP and it is a long-term strategy with due to review after five years. It was discussed between ALD senior staff that their main constraint in delivering their programmes is the lack of fund and human resources. During the consultation, almost 75% of ALD senior officers were on travel implementing their programmes funded by three major donors FAO, IFAD and GEF through the LCDF project.

3.5 Retreat

A one-day retreat with ALD senior staff was also conducted after the group consultation. It was anticipated that since the timing is approaching end of the year, there will be more traveling from ALD senior officers to attend their outreach programmes on outer island, so the retreat was called to move the work on the Action Framework and to ensure that the deliverables for the Action Framework fall according to the set timeframe. The objective of the retreat was to get ALD different sections finalised their project ideas and focused on their programmes to be reflected well in the final AF.

FIGURE 12
Agriculture and Livestock Division staff engaged in consultations and capacity building training, Ambo, South Tarawa

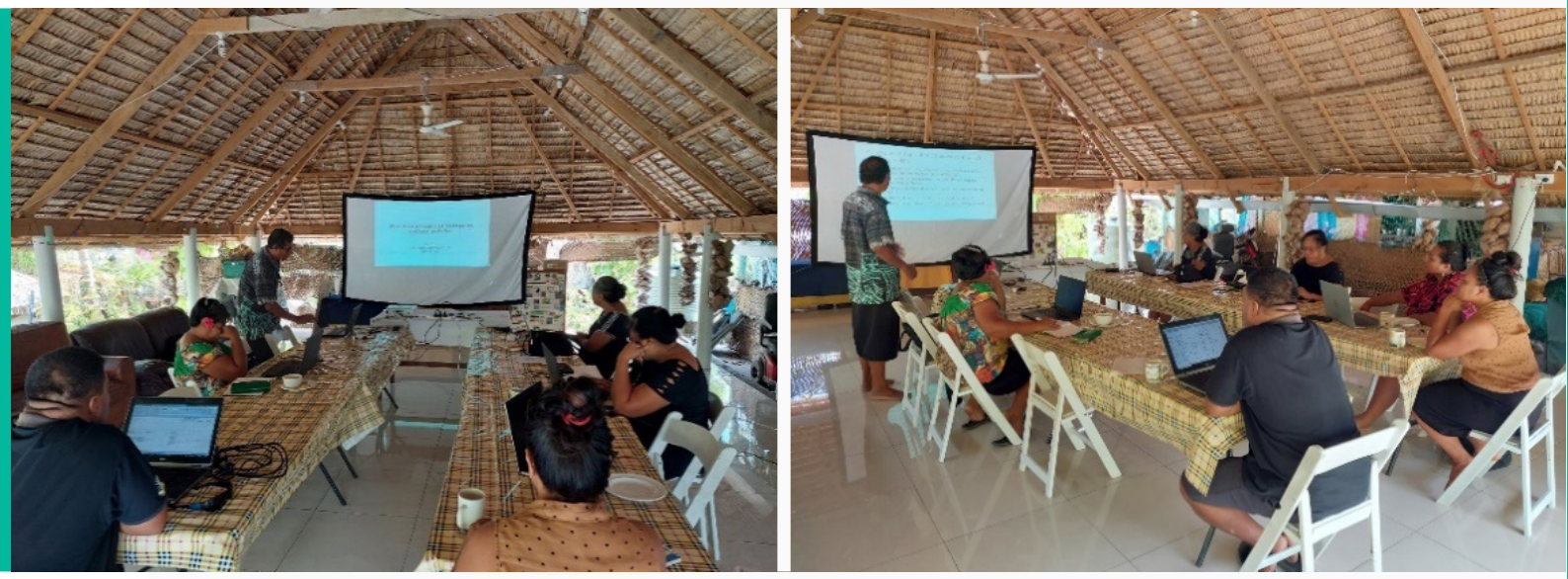
Source: R. Craven 2021

ALD in partnership with GGGI used this one-day retreat to identify 4 key priority projects from the new list to be finalised into a project concept notes (PCN) which will be presented to potential donor partners of ALD for funding consideration. An estimated costing of (AUD) $37, 490,000.00 will be required to deliver the desired and identified activities in order to achieve the main objective of KAS which is to increase agriculture productivity to support domestic markets and increase household consumption.

3.6 Verification of Action Framework and development of 4 project concept notes

The purpose of this verification was to present the draft Action Framework to ALD senior officers and as well as to present the four identified project topic for approval and to be used to develop into project concept note (PCN). It is also an opportunity for ALD different sections to provide the final input on the Action Framework. During the discussion, two new inputs were proposed by Director and Deputy Director which they feel are important in order to move and further assess the progress on actions taken to implement Action Framework. The two new proposals are the Food System and Policy and legislative development and enforcement. Food System was very important and need policy in place to address issues related to food production from farm to marketing or consumption. It was also discussed that gaps identified by Food System such as food processing, packaging, labelling, nutrition, health and safety. It was discussed and agreed by senior staff of ALD that two can be accommodated or reflected well in the recommendations of KAS.

FIGURE 13
Verification of Draft Action Framework by ALD senior officers



Source: R.Craven 2021

TABLE 3

Opportunities identified in KAS that the Five Year Action will consider to address

ACTION TITLE	ESTIMATED COST (AUD)	OBJECTIVES
Support ALD technical personnel and support staff capacity building	$545,000	Enhance, sustain and improve the Agriculture and Livestock Development in Kiribati to support their advisory and problem solving for farmers in the field, through training, media announcements or alternative means of communication (phone call, email, or social media).
Crop Research and crop diversification	$2,500,000	Sustainable crop production system developed and promoted. Crop diversification, conservation and utilization. Island gene-bank established and utilized. Open pollinated seed gene bank and tissue culture sourced and conserved.
Livestock production and animal health	$2,404,000	Sustainable Kiribati livestock production systems developed and promoted. Imported feed, local feed and new line of breeding stock (pig, poultry, duck and goat) introduced and distributed to outer islands and farmers. Animal welfare sustained.
Biosecurity for trade	$990,000	Enhance trade to support food security. I-Kiribati is more than 75% dependent on imported food for food security. While this Action Framework is targeting local produce in the long run, the supply of fresh imported food should be improved and sustained.
Support delivered in partnership with Kiribati Organic Farmers Association (KOFA)	$1,145,000	Increase agriculture and livestock local production through increase in number of household engaged in small scale production to support domestic market and local consumption.
Support to Policy Development	$400,000	There is a need for policy development to ensure that programs are well coordinated and in line with certain regulations. Policy that promote and create enabling environment for agriculture development.
Support coconut product development (toddy syrup, toddy sugar, charcoal etc.), and other potential cash crops including banana, breadfruit and pandanus, replanting scheme	$7,000,000	Coconut is the only cash crop that has served I-Kiribati communities since copra was on the market. This is a real tree of life for all I-Kiribati on outer islands. The need to further explore the potential of other coconut products for niche market including toddy syrup, toddy sugar and charcoal to name a few. The is a need to explore the potential for other local crops like banana, breadfruit, pandanus, babai (swamp taro).
Climate Change mitigation	$450,000	Climate change will make our vulnerable situation worse so innovative solutions are needed to make our people adapted.
TOTAL	**$15,434, 000**	

CHAPTER 4.

THE 5-YEAR ACTION FRAMEWORK

The Action Framework will be implemented by ALD to address the desired objectives in partnership with key line ministries, active NGOs, civil societies, current and potential donor partners, as described in Table 4 below.

The objectives and planned activities for the Five Years Action Framework of KAS are presented below.

TABLE 4

Appropriate sustainable crop production systems for Kiribati developed, promoted and adopted

ACTIVITIES	RESPONSIBLE SECTION		INDICATORS/ TARGET	REQUIREMENTS/ ASSUMPTIONS/RISKS	TIME FRAME	RESOURCE IMPLICATIONS
	LEAD	SUPPORT				
1. APPROPRIATE SUSTAINABLE CROP PRODUCTION SYSTEMS FOR KIRIBATI DEVELOPED, PROMOTED AND ADOPTED						
1.1 Improving traditional crop diversity that is less demanding in terms of production inputs compared to hybrid/imported exotic crops.	CPR /ITE	GOK/SPC/ FAO/IFAD/ PRC	Number of traditional crops diversity improved, conserved and utilized.	The prolong drought period may be affect survival of the selected crops and the human resource capacity and availability. Diversity will be undertaken alongside using specialised terracing and landscaping, raised garden beds, constructed beds, commercial products (including FoodCubes and Hydroponics).	By end 2023	Funding and Staff commitment
1.2 Select varieties that are adapted well to the Kiribati environment, that is, high temperature, drought and brackish water.	CPR/ITE	GOK/SPC/ FAO/IFAD/ PRC	Develop a standard bi-annual statistical product that presents detailed information on gross fuel type imports and consumption by sector.	Selected varieties are available and again the structural improvements listed above are implemented.	End of 2024	Funding and staff commitment

ACTIVITIES	RESPONSIBLE SECTION		INDICATORS/ TARGET	REQUIREMENTS/ ASSUMPTIONS/RISKS	TIME FRAME	RESOURCE IMPLICATIONS
	LEAD	SUPPORT				
1. APPROPRIATE SUSTAINABLE CROP PRODUCTION SYSTEMS FOR KIRIBATI DEVELOPED, PROMOTED AND ADOPTED						
1.3 Low cost but productive soil improvement technology developed, promoted and adopted by farmers including "whole-farm systems" and mulching.	CPR/ITE	GOK/SPC/ FAO/IFAD/ PRC/KCSA	Number of compost mixture appropriate for Kiribati condition are used. Number of farmers using mulch.	Local compost ingredients are always available; dry litter piggery systems are popularised and integrated into vegetable production at the household level.[1] New planting systems are employed using specialised terracing and landscaping, raised garden beds, constructed beds, commercial products (including FoodCubes and Hydroponics). Soil structure is improved using high-carbon mulch and retention of plant material in compost heaps. Burning leaves etc ceases.	End of 2022	Staff availability
1.4 Agroforestry system appropriate for Kiribati condition developed and promoted.	CPR/ITE	GOK/SPC/ FAO/IFAD/PRC	Number of Agroforestry systems on field demonstration.	The demo-sites are well managed and productive.	End of 2023	Staff availability
1.5 Island "living" gene bank established and utilized.	CPR/ITE	IC/ALD/SPC	Number of gene-bank demo sites managed.	Land is made available on each island for the living gene bank.	End of 2023	Staff commitment
1.6 Water management and harvesting technology appropriate to Kiribati soil condition developed and adopted.	CPR/ITE	ACIAR/SPC/ FAO/IFAD/ GGGI	Low-cost water management and harvesting technology adopted by farmers.	"Closed" water cycling systems to be incorporated, including Food Cube Technology and others. Modular solutions needed for easy expansion and to accommodate household-level use. Mulching for water retention and watering conserving systems; containers and tins are put in use.	End of 2023	Expansion of Food Cube Pilot, staff and funding availability
1.7 Open pollinated seed and seed storage facility established and utilized.	CPR/ITE	FAO/IFAD/ SPC/GGGI/CPR	Number of open-pollinated seeds stored and distributed.	Storage facilities are maintained.	End of 2023	Funding and staff capacity
1.8 Identify other potential cash crop to diversify sources of income for outer islands.	CPR/ITE	FAO/IFAD/ GGGI/PRC/ GOK	New potential cash crop developed and promoted.	New products will find potential domestic markets.	2022 to 2025	Funding and staff availability

[1] Development of Bio-gas technology to be reviewed following completion of the two pilots under construction on South Tarawa. This technology is known to work elsewhere but is unproven in Kiribati. The technology requires a number of technical conditions to be met. If favorable, piggery, household and potentially village-level waste could be used to produce bio-gas and compost material.

ACTIVITIES	RESPONSIBLE SECTION		INDICATORS/ TARGET	REQUIREMENTS/ ASSUMPTIONS/RISKS	TIME FRAME	RESOURCE IMPLICATIONS
	LEAD	SUPPORT				
1. APPROPRIATE SUSTAINABLE CROP PRODUCTION SYSTEMS FOR KIRIBATI DEVELOPED, PROMOTED AND ADOPTED						
1.9 Value adding, improving quality, diversifying product range and targeting niche market would fetch premium price and sustainable in long run for coconut and other potential crops such as banana, pandanus and breadfruit.	CPR/ITE	FAO/IFAD/ SPC/GGGI/ GOK/PRC	Number of islands received support in their replanting scheme.	Access to food preservation knowledge is shared. There is demand for value-added products. Tree planting materials sourced and distributed; uptake in planting coconuts, banana, pandanus and breadfruit, lead times for bearing fruit measured in years (not months).	2022 to 2026	Funding and staff availability
2. APPROPRIATE SUSTAINABLE SMALL LIVESTOCK PRODUCTION SYSTEM FOR KIRIBATI DEVELOPED, PROMOTED AND ADOPTED						
2.1 Appropriate livestock management practices developed and promoted.	LPAW/ ITE	FAO/SPC/PRC	Simple livestock management guidelines produced and used.	Livestock herds are manageable.	End of 2023	Funding and staff commitment
2.2 New livestock breeding line introduced using Artificial Insemination (AI) technology.	LPAW/ ITE	PRC/FAO/SPC	Number of new breeding stock for pig, poultry, duck and goat mass produced.	New breeding lines are manageable and adapted to Kiribati condition.	2022 to 2025	Staff capacity and funding
2.3 Feed stock is always available to support LPAW and small-scale livestock farmers.	LPAW	PRC/SPC/FAO	Number of feed buffer readily available to livestock farmers.	Good storage facilities existed to keep feed stock safe and in good quality.	End 2022	Funding and staff capacity
2.4 Livestock genetic diversity, conserved, promoted and utilized.	LPAW	FAO/PRC	Number of improved breed adapted well to Kiribati condition developed and promoted.	Elite local breed and improved breed are manageable.	End of 2025	Funding and staff capacity
2.5 Local feed formulas and ingredients developed and used.	LPAW	FAO/PRC	Local feed is available to local farmers.	Local feed ingredients always available and the quality maintained.	End of 2025	Staff capacity and funding
2.6 Low cost and manageable livestock pen design developed and promoted.	LPAW	FAO/PRC	Number of low cost and simple design livestock pen adopted.	The design is manageable and materials available.	End of 2024	Funding and staff commitment
2.7 Appropriate drugs for both domestic livestock and pets are well managed and always in stock.	LPAW	SPC/FAO/PRC	Number of domestic livestock and pets treated.	Domestic livestock and pets disease are contained and manageable.	End of 2024	Funding and staff capacity

ACTIVITIES	RESPONSIBLE SECTION		INDICATORS/ TARGET	REQUIREMENTS/ ASSUMPTIONS/RISKS	TIME FRAME	RESOURCE IMPLICATIONS
	LEAD	SUPPORT				
3. ENABLING ENVIRONMENT, MARKETING MECHANISM AND INFRASTRUCTURE DEVELOPED AND USED						
3.1 Agriculture Sector, financing and investment developed and promoted.	ITE/ Admin	GOK/SPC/ GGGI	Financing support to farmers identified and used.	Finance is made available and managed properly.	End of 2023	Funding and staff capacity
3.2 Domestic value chain developed and promoted.	ITE	GOK/FAO/ SPC/PRC	Number of new products developed and promoted.	Financing for the producing new product is secured.	End of 2024	Funding and staff capacity
3.3 Agriculture transport and marketing infrastructure improved.	ITE	GOK/FAO/ SPC/PRC	Number of domestic markets developed and utilized.	Domestic markets and transport are used and managed well.	End of 2025	Staff capacity and funding
3.4 Establish and support a new cooperative Kiribati Organic Farmers Association (KOFA).	ITE	GOK/PRC/ FAO/GGGI	KOFA established fully manned and operational.	Funding is available and right people are sourced with proper guidelines to follow and binding MOU.	End of 2024	Staff capacity and funding
3.5 Technical skills and Capacity building for ALD extension services, improved, enhanced and sustained.	ALD-Admin	GOK/SPC/ FAO/GGGI/ PRC	Number of ALD staff received training.	Technical skill and human resource personnel for ALD sustained.	End of 2026	Funding and staff commitment
3.6 Farming and business skills of active farmers improved.	ITE	GOK/MCIC/ KCCI	More active farmers are able to secure their income and use it to sustain their farming by purchasing inputs and saving surplus.	Appropriate farm tools and other inputs are always available from private sectors.	End of 2024	Funding and staff availability
3.7 More active farmers (crop and livestock) are well knowledgeable and able to sustain their faring with their income.	ITE	GOK/PRC/ GGGI	More active farmers involve and support KOFA.	Materials (planning materials and livestock breed) are readily available to farers.	End of 2024	Funding and staff commitment
4. BIOSECURITY AND BORDER CONTROL ARE PROTECTED, MANAGED AND TRADE FACILITATION ENHANCED AND IMPROVED						
4.1 Pest list and livestock diseases' outbreak are well managed and updated.	BPH	FAO/SPC	New livestock disease outbreak reported, monitored and inform importers.	New pest and diseases identified and prevent movement.	End of 2022	Funding and staff availability

ACTIVITIES	RESPONSIBLE SECTION		INDICATORS/ TARGET	REQUIREMENTS/ ASSUMPTIONS/RISKS	TIME FRAME	RESOURCE IMPLICATIONS
	LEAD	SUPPORT				
4. BIOSECURITY AND BORDER CONTROL ARE PROTECTED, MANAGED AND TRADE FACILITATION ENHANCED AND IMPROVED						
4.2 Biosecurity scanners at all points of entry are placed, managed and maintained.	BPH	SPC/GOK	Number of appropriate machines purchased and installed at all points of entry.	Machines are maintained and fully utilized.	End of 2023	Funding and staff availability
4.3 Local pest control using local ingredients developed and promoted.	BPH	SPC/FAO/PRC	Number of local pest control used.	No new pest outbreak.	End of 2024	Funding and staff availability
4.4 Portable fumigation chamber made available at all main centres.	BPH	FAO/SPC/ GGGI	Number of fumigation chambers purchased and used.	Right and safe chemicals are available.	End of 2024	Funding and staff availability
4.5 Biosecurity computers at all main centres are updated, upgraded and maintained to facilitate domestic import and export trade.	BPH	FAO/SPC	Number of new computers are installed and properly managed.	System installed support to facilitate trade.	End of 2022	Funding and staff availability
5. BIOSECURITY AND BORDER CONTROL ARE PROTECTED, MANAGED AND TRADE FACILITATION ENHANCED AND IMPROVED						
5.1 Biosecurity Act reviewed and enforced.	ALD-Admin/ BAH	FAO/SPC	Number of policies developed, approved and endorsed.	Polices support ALD initiatives and create enabling environment.	End of 2024	Funding and staff capacity
5.2 Idle land policy developed and enforced..	ALD-Admin	SPC/FAO	Number of idle land policy developed and enforced.	Idle lands are fully utilized in agriculture activities and productive.	End of 2023	Funding and staff capacity
5.3 Agriculture policy aligned to nutrition and health policy.	ALD-Admin	SPC/FAO/ MHMS	Policies aligned.	Support from key lie ministries is given to ALD.	End of 2023	Funding and staff availability
5.4 Livestock waste management policy developed and enforced.	ALD-Admin/ LPAW	FAO/SPC/ GGGI	Animal waste management policy developed and enforced.	Ground water contamination is reduced.	End of 2022	Funding and staff availability
5.5 Community and outer island consultation.	ALD-Admin	GGGI/SPC/ FAO	Number of islands consulted and informed about new policies.	Strong support from island councils and communities to new polices.	2022 to 2024	Funding and staff availability
5.6 Policy to address idle youth and increase their engagement in agriculture.	ITE/ALD-Admin	GGGI/FAO	Policy developed and enforced.	Enabling environment is there to support youth engagement in agriculture activities.	2022 to 2024	

The outputs with indicators in Table 4 above are put in more detail in the excel matrix provided in the link below. This includes the strategic approach to implement the activities with an estimated budget, the timeframe which the responsible officer has to work toward needs to be completed during the preparation of Annual Work Plans for each Unit in the Division.

4.1 5-Year Action Framework Costed Activity Table

5-YEAR ACTION FRAMEWORK FOR KIRIBATI AGRICULTURE STRATEGIC 2020-2030

VISION	MISSION
Household incomes, nutrition, health, food security and living standards in Kiribati are improved through increased domestic agricultural production and productivity.	To increase national and community engagement to raise agricultural production and productivity for household consumption, domestic markets and exports.

STRATEGY	ACTIVITIES	INDICATOR	STATUS	BASELINE	TARGET	TARGET IN NUMBERS	ACTIVITIES COST PER UNIT (AUD)	DIVISION COST
1. SUSTAINABLE AND APPROPRIATE CROP PRODUCTION SYSTEMS DEVELOPED AND PROMOTED								
1.1 Crop diversity improved, conserved and developed	1.1.1 Establish a research centre equipped with tools and equipment to do breeding for coconut, pandanus and babai.	No of improved traditional crops developed and utilized.	Planning	1%	100%	3	$650 000	
	1.1.2 Selection of exotic vegetable and fruit tree varieties adapted to Kiribati conditions.	No of varieties adapted to atoll conditions selected.	Planning	0%	100%	15	$0	
	1.1.3 Selection of varieties well adapted to potential climate impacts such increased temperature, drought and sea water intrusion.	No of varieties adapted to climate impact selected and utilized.	Planning	0%	100%	5	$0	
	1.1.4 Select and procure open pollinated (OP) seed and store in a proper storage facility.	No of traditional crop species conserved and utilized.	Planning	0%	100%	5	$350 000	
	1.1.5 Established new gene-banks and improve those already existed on all the islands.	No of Nutrition sensitive agriculture and nutrition food system linked to heal and nutrition developed.	Planning	0%	100%	22	$0	
	1.1.6 Established demonstration sites to promote and enhance food security and nutrition.	No of food system developed and utilized.	Planning	0%	100%	22	$0	

STRATEGY	ACTIVITIES	INDICATOR	STATUS	BASELINE	TARGET	TARGET IN NUMBERS	ACTIVITIES COST PER UNIT (AUD)	DIVISION COST
1. SUSTAINABLE AND APPROPRIATE CROP PRODUCTION SYSTEMS DEVELOPED AND PROMOTED								
1.2 Soil Management technologies appropriate to Kiribati conditions developed and adopted	1.2.1 Conduct research to evaluate improve compost mixture against local farmers' own compost mixture.	No of sustainable technologies developed and adopted.	Planning	0%	100%	5	$450 000	
	1.2.2 Develop basic guidelines for different crop compost mixtures and liquid fertilizers.	No of compost mixture and other soil improvement technologies produced and utilized.	Planning	0%	100%	5	$0	
	1.2.3 Established demonstration site to promote Kiribati compost mixture.	No demonstration site established and utilized.	Planning	0%	100%	5	$0	
1.3 Agroforestry systems and appropriate for Kiribati developed and adopted	1.3.1 Develop agroforestry systems using indigenous trees grown in combination with food crops and livestock (island demonstration).	No of agroforestry system suitable for atolls developed and adopted.	Planning	5%	100%	5	$300 000	
	1.3.2 Integration of crops and trees that are resilient to the impact of climate change to improve food and nutrition security (island demonstration).	No of trees and crops selected to improve the system identified and adopted.	Planning	5%	100%	5	$0	
1.4 Water management technologies appropriate for Kiribati developed and adopted	1.4.1 Identify irrigation systems suitable for Kiribati soil condition.	No of appropriate irrigation system identified, promoted and adopted.	Planning	0%	100%	5	$450 000	
	1.4.2 Promote compost, mulching and agroforestry system for water utilization.	No of appropriate cropping systems and soil management systems for water usage developed and adopted.	Planning	0%	100%	5	$0	
	1.4.3 Usage of drought tolerance traditional trees and crops in food production.	No of drought tolerance trees and crop varieties developed, promoted and adopted.	Planning	0%	100%	5	$300 000	
						Unit Total	$2 500 000	$2 500 000

STRATEGY	ACTIVITIES	INDICATOR	STATUS	BASELINE	TARGET	TARGET IN NUMBERS	ACTIVITIES COST PER UNIT (AUD)	DIVISION COST
2. SUSTAINABLE SMALL-AIMAL LIVESTOCK PRODUCTION SYSTEMS DEVELOPED AND PROMOTED								
2.1 Appropriate livestock management practice developed and promoted	2.1.1 Develop manual (basic guidelines) on improved sustainable livestock management practices to increase productivity.	No of materials produced and shared.	Planning	0%	100%	6	$65 000	
	2.1.2 Develop basic guidelines in improving livestock health and waste management.	No of materials produced and livestock waste is managed properly.	Planning	0%	100%	1	$0	
	2.1.3 Design small scale and low cost livestock pens (dry litre design) using both local and imported materials.	No of simple livestock pen design developed and promoted.	Planning	0%	100%	2	$300 000	
	2.1.4 Procure material for new pig and poultry pens (Tarawa and Kiritimati) and stock of feed to sustain livestock production.	No of new pens constructed.	Planning	0%	100%	6	$300 000	
2.2 Livestock genetic diversify, improved, conserved and utilized	2.2.1 Identify improved breeds of pig, poultry and duck locally to be used in a breeding programme.	No of improved breed procured and tested at Livestock Unit.	Planning	0%	100%	6	$322 000	
	2.2.2 Introduce new livestock breed through importation of seamen and eggs.	No of new line of livestock imported and evaluated.	Planning	0%	100%	6	$0	
	2.2.3 Do cross-breeding and selection for characteristics suitable to Kiribati condition (feed, hot, water, to name a few).	No of improved breed evaluated under different conditions (local feed vs imported, housing vs tying).	Ongoing	0%	100%	6	$150 000	
	2.2.4 Mass produce the selected breed for distribution.	No of elite or improved breed raised and distribute.	Ongoing	0%	100%	4	$150 000	
2.3 Livestock feed with local ingredients developed and shared	2.3.1 Conduct research on local feed recipes.	Local feed recipe produced.	Planning	0%	100%	1	$50 000	
	2.3.2 Sustain supply of quality livestock feed.	No of imported quality feed in stock.	Planning	0%	100%	1	$817 000	

STRATEGY	ACTIVITIES	INDICATOR	STATUS	BASELINE	TARGET	TARGET IN NUMBERS	ACTIVITIES COST PER UNIT (AUD)	DIVISION COST
2. SUSTAINABLE SMALL-AIMAL LIVESTOCK PRODUCTION SYSTEMS DEVELOPED AND PROMOTED								
2.4. Livestock waste management and use improved	2.4.1 Developed environmentally friendly livestock pen suitable for small scale household livestock production.	Dry litre pen suitable for Kiribati promoted.	Ongoing	5%	100%	4	$0	
	2.4.2 Promote the most desired design.	No of design adopted.	Planning	0%	100%	2	$0	
	2.4.3 Procure Animal Health equipment and medical supplies for vet.	Relevant equipment procure and no of paravet training conducted.	Planning	0%	100%	10	$250 000	
						Unit Total	$2 404 000	$2 404 000
3. CAPACITY BUILDING FOR ALD AND KOFA IMPROVED AND ENHANCED WITH ENABLING ENVIRONMENT AND MARKETING MECHANISMS DEVELOPED								
3.1 Agriculture Sector financing and developing Agri-business guidelines	3.1.1 Support KOFA, develop specific TOR and enhance capacity to deal with members effectively.	KOFA office established, fully manned and executed relevant role.	Planning	0%	100%	50	$75 000	
	3.1.2 Enhance KOFA capacity in specific but technical areas.	KOFA capacity improved and play important role in agriculture related productivity.	Planning	0%	100%	1	$0	
	3.1.3 Provide investment to cater for the need of capital to access cost of inputs/ produces when it comes to market stage.	Farmers' access to financing (small loan interest).	Planning	0%	100%	1	$70 000	
	3.1.4 Assess KOFA performance.	No of reports evaluated.	Planning	0%	100%		$0	
	3.1.5 Identify gaps within the programme and make urgent steps to avoid issues.	No of recommendations made.	Planning	0%	100%		$0	
	3.1.6 Identify idle youth and women and train to engage in agriculture programmes.	No of idle youth and single parents engaged in farming.	Planning	0%	100%		$175 000	
	3.1.7 Support KOFA to run Farmers' market day.	No of Market run.	Planning	0%	100%		$150 000	
	3.1.8 Procure proper storage facilities to support outer island producers and Tarawa.	No of storage facilities procured.	Planning	0%	100%		$350 000	
	3.1.9 Train of Trainers (TOT) to assist in promoting agriculture programmes and initiatives.	No of training conducted.	Planning	0%	100%		$75 000	

STRATEGY	ACTIVITIES	INDICATOR	STATUS	BASELINE	TARGET	TARGET IN NUMBERS	ACTIVITIES COST PER UNIT (AUD)	DIVISION COST
3. CAPACITY BUILDING FOR ALD AND KOFA IMPROVED AND ENHANCED WITH ENABLING ENVIRONMENT AND MARKETING MECHANISMS DEVELOPED								
3.2 Domestic value chain developed	3.2.1 KOFA in collaboration with ALD-ITE run training farmers in addressing production control and safe process.	No of training conducted.	Planning	0%	100%	50	$0	
	3.2.2 ALD-ITE work in collaboration with KOFA to coordinate and manage the value chain development programme.	Coordination Unit established and well managed.	Planning	0%	100%	1	$0	
	3.2.3 ALD work in collaboration with KOFA to train members crop cycle in order to sustain the supply chain of the produce.	No of training conducted and produced reached consumers in good quality.	Planning	0%	100%	50	$250 000	
	3.2.4 Replanting coconut tree the true tree of life for I-Kiribati.	No of islands replant their coconut plantations.	Ongoing in small scale	15%	100%		$7 000 000	
3.3 Agriculture, transport and marketing infrastructure improved with emphasis on health	3.3.1 KOFA monthly meeting.	No of meeting called	Planning	0%	100%	2	$0	
	3.3.2 Coordinate private and donor support to the infrastructure.	No of meetings coordinated.	Planning	0%	100%	1	$30 000	
	3.3.3 KOFA to continue a dialogue among members in order to increase and sustain the volume of farm produce.	No of active farmers engaged in farming activities.	Planning	0%	100%	50	$15 000	
	3.3.4 Established data for island specific potential cash crop to be domesticated improved and conserved.	Island potential crop identified and mass produced.	Planning	0%	100%		$150 000	
	3.3.5 Increase in number of households engaged in small scale home gardening by conduct country training and demonstration.	No of families changed their diet by consuming local food crops and livestock products.	Planning	0%	100%		$150 000	
	3.3.6 Increase and sustain supply of local produce with good quality.	Volume of local produced sold and consumed.	Planning	0%	100%		$50 000	
	3.3.7 Conduct awareness and campaign promotional programme on local food through drama, clips and flyers.	No of drama, clips and flyers produced and used.	Planning	0%	100%		$150 000	
	3.3.8 Do cooking demonstrations in communities and boarding schools and provide local recipes.	No of cooking demonstrations, No of people trained and No of cooking book completed and shared.	Planning	0%	100%		$0	
						Unit Total	$8 690 000	$8 690 000

STRATEGY	ACTIVITIES	INDICATOR	STATUS	BASELINE	TARGET	TARGET IN NUMBERS	ACTIVITIES COST PER UNIT (AUD)	DIVISION COST
4. CLIMATE CHANGE MITIGATION AND ADAPTATION ENHANCED								
4.1 Climate change risks and impacts are managed and minimized	4.1.1 Conduct training and awareness on adverse impacts of CC on crop and livestock production.	No of deep liter constructed and used.	Ongoing	5%	75%	10	$450 000	
	4.1.2 Conduct training and awareness programme on how farmers can mitigate the adverse impact of CC.	No of materials produced and distributed.	Ongoing	0%	15%	10	$0	
	4.1.3 Conduct training and awareness on how farmers can adapt to survive and able to continue their productivities in the face of CC.	No of new poultry stock received.	Ongoing	5%	60%	10	$0	
	4.1.4 Procure materials for piggery and compost houses on all islands (22 island councils).	Funding secured and all demonstration sites constructed.	Ongoing	5%	100%	22	$0	
						Unit Total	$450 000	$450 000
5. BIOSECURITY OPERATION AND MANAGEMENT ENHANCED AND IMPROVED								
5.1 Capacity to increase domestic and export trade developed and strengthened	5.1.1 Enhance Biosecurity staff skills on Import Rik Assessment (IRA) and Import Specifications on Market Access (ISMA).	No of Biosecurity staff received proper training on these specific areas.	Ongoing	20%	100%		$75 000	
	5.1.2 Updating the national pest list.	National Pest List updated.	Ongoing	20%	100%		$125 000	
	5.1.3 Biosecurity officers received training on commodity pathway analyses.	No of training conducted.	Ongoing	20%	100%		$0	
	5.1.4 Issuance of Phytosanitary and animal health certificates for export commodities and produce	No of Phyto certificates issued.	Ongoing	20%	100%		$50 000	
	5.1.5 Portable fumigation/ heat facility established to facilitate export.	No. of fumigation/heat treatment facilities procured.	Planning	0%	100%		$150 000	
	5.1.6 Biosecurity staff and local fumigators received training & certified on the operation of fumigation/heat chamber.	No of training conducted.	Planning	0%	100%		$0	

STRATEGY	ACTIVITIES	INDICATOR	STATUS	BASELINE	TARGET	TARGET IN NUMBERS	ACTIVITIES COST PER UNIT (AUD)	DIVISION COST
5. BIOSECURITY OPERATION AND MANAGEMENT ENHANCED AND IMPROVED								
5.2 Quarantine /biosecurity capacity improved	5.2.1 Biosecurity officers trained in pest and disease identification.	No of Biosecurity officers received proper training.	Ongoing	20%	100%		$0	
	5.2.2 Biosecurity officers trained on pest and disease control measures.	No of Biosecurity Officers received proper training.	Ongoing	20%	100%		$75 000	
	5.2.3 Procurement of proper scanner, tablets & GPS for biosecurity officers.	No of scanners and tablets purchased and used.	Ongoing	0%	100%		$350 000	
	5.2.4 Biosecurity facilities upgraded & equipped to manage Biosecurity risks and update pest/disease database.	No. of Biosecurity facilities upgraded, equipped & maintained.	Ongoing	15%	100%		$75 000	
5.3. Basic crop pest control	5.3.1 Training farmers to identify and understand pest cycle.	No of pests identified.	Ongoing	5%	100%		$90 000	
	5.3.2 Develop pest control recipe using local plants.	No of local ingredient pest control developed.	Ongoing	5%	100%		$0	
	5.3.3 Integrate Early Warning System into farmers & community training programs.	No of EWS conducted.	Ongoing	5%	100%		$0	
						Unit Total	**$990 000**	**$990 000**
6.0 POLICY AND REGULATION DEVELOPMENT								
6.1 Development of relevant agriculture related policies	6.1.1 IC and community consultation on Livestock Policy in South Tarawa, Kiritimati and outer islands.	Two consultations conducted.	Ongoing	0,50%	100%		$250 000	
	6.1.2 IC and community consultation on Idle land Policy in Tarawa, Kiritimati and outer islands.	Idle land policy developed and used.	Planning	0,50%	100%		$0	
	6.1.3 IC and community consultation on Food & Nutrition Security Policy in South Tarawa, Kiritimati and outer islands.	No policy developed and IC consultation conducted.	Planning	0,50%	100%		$0	

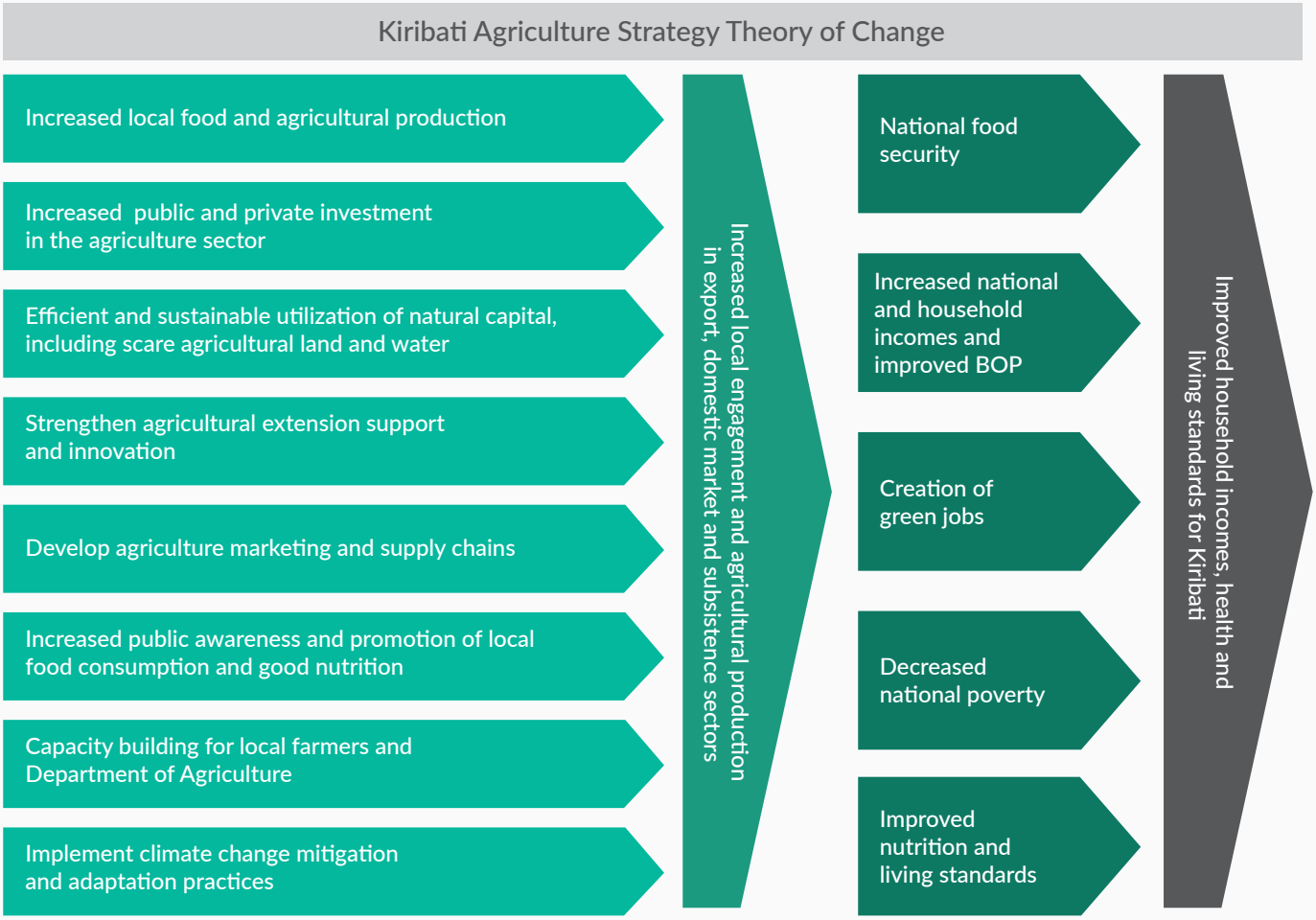
STRATEGY	ACTIVITIES	INDICATOR	STATUS	BASELINE	TARGET	TARGET IN NUMBERS	ACTIVITIES COST PER UNIT (AUD)	DIVISION COST
			6.0 POLICY AND REGULATION DEVELOPMENT					
6.2 Development of relevant agriculture related regulations	6.2.1 Conduct consultation on Te Tania ni Maiu Bylaw in South Tarawa, Kiritimati and outer islands.	No of consultation conducted on Tania ni Maeu.	Planning	0%	100%		$150 000	
	6.2.2 Develop relevant Biosecurity Regulations.	No of Biosecurity regulations developed and enforced.	Planning	0%	100%		$0	
						Unit Total	$400 000	$400 000
			5-YEAR ACTION FRAMEWORK TOTAL COSTS					$15 434 000

Table 3 gave an estimated summary cost of AUD15,434,000 to this 5-Year Action Framework which also included programmes to be delivered by the five Sections of ALD in partnership with key line ministries and donor partners. Table 4, the 5-Year Action Framework Costed Activity Table, maps the Outputs of the KAS to be delivered by this Action Framework. The Costed Activity Table also provides details of activities, indicators, baselines and targets for achievement of the Framework. Timeframes and responsible staff need to be identified and named during the annual work plan process each year.

4.2 Kiribati Agriculture Strategy and Action Framework Theory of Change

To address the national challenges of low community engagement in the development process and low productivity and production in agriculture, opportunities are presented to increase the involvement of the local community in the sector and to growing a wider range of crops, both for export and in particular for domestic, household consumption. Household productivity is highly dependent upon access to suitable water supplies, land availability and supply of compost and planting materials. Where limited space is available, livestock farming is even more problematic. The intention of increasing domestic food production will certainly enhance food security and improve nutrition and health. An analysis of the food supply in 2005 found that 64% of food consumed in Kiribati that year was imported, indicating vulnerability with respect to food security (ALD, 2016). As discussed above, the vulnerability will be further increased by the impact of climate change and the pandemic, including the recent one such as Covid-19. Some of the desired projects may require a feasibility study to properly identify the specific issues with specific actions and resources while others are ready to be implemented once funding is secured. A multi-sector integrated approaches is also identified by KAS as one of the keys to success in many projects with an emphasis to pull limited resources together to maximized the positive impacts to the targeted beneficiaries. Figure 9 below illustrates the approach to reach the main objective of KAS.

FIGURE 14
Theory of Change in order to reach the main objective of KAS



Source: Kiribati Agriculture Strategy, Government of Kiribati 2020

As clearly highlighted during KAS consultation, changing the mindset of I-Kiribati to eat local food will certainly help to engage in agriculture activities is a huge challenge for ALD and other initiatives already undertaken. The theory of Change above gives a direction which can be used as guidance to influence the mindset and encourage them to engage in any form of agriculture related activities that will contribute to their community obligations and improve their social welfare.

4.3 Initiatives taken by ALD in response to Covid-19

During international border closures from March 2020 to the present, and also the nation-wide lockdown period in early 2022, ALD, in partnership with relevant donor partners and key line ministries, took a responsive approach to address emerging issues anticipated to have major impact on the lives of I-Kiribati in terms of food shortage. Action taken include promoting the fast provision of local planting materials as well as exotic vegetable seeds and small livestock to farmers on both South Tarawa and outer islands. Community and youth training programme on home gardening and crop management and propagation methods was provided and on field demonstration was also included. Community nurseries that have already established together with individual families who actively and continue their small home gardening activities were also supported by way of upgrading their skills and supplied with seedlings.

FIGURE 15
Community training by ALD and FAO during Covid-19 pandemic lockdown 2020

Source: T. Ioane 2020

4.4 Support to Kiribati Organic Farmers Association (KOFA)

The support to the Kiribati Organic Farmers Association (KOFA) is also very important and must be well defined so that funds provided are fully utilized for the specific purpose. ALD must develop the TOR and a biding MOU as a guideline for KOFA. The TOR can be reviewed every end of the year with an assessment for future improvement to this new initiative. There are good examples of successful stories within the region where farmers association have run their show in pushing agriculture programme with support from private sectors and donors. KOFA, if runs well and well developed will be very useful and will complement the programs and other areas that ALD implementing. KOFA can do a specific task of coordinating farmers' market or can do the collection of farm products from outer islands and make them available to certain outlets on South Tarawa. ALD will provide technical support and as well as funding and management guidance to KOFA throughout the trying period. The prime-objective for this new initiative is to see all agriculture related activities are improved, enhanced and sustained, with the sole purpose of sustaining the supply of locally produced both crop and livestock products and that more household consumed agriculture products locally grown.

It is very important that ALD, in partnership with donor partners, work together to develop and support KOFA in every respect of all desired functions KOFA is expected to deliver. Sufficient fund sand strong technical support are needed to monitor, further improve and sustain KOFA function.

FIGURE 16
Pigs and poultry are the only two household-level livestock industries currently under production in Kiribati

Source: T. Ioane 2020

RECOMMENDATIONS

This Action Framework requires ALD to be effective. ALD will need professional staff and more financial resources. As described in the Introduction of the KAS, an integrated approach is the most appropriate way to address issues and challenges facing Agriculture and Livestock Division development. ALD alone cannot drive and deliver all activities and desired programmes which will make a true impact in the lives of I-Kiribati. There is also a role to play by the private sector, non-government agencies including NGOs and subsistence farmers. ALD needs to work in partnership with all key players to move this Action Framework forward. ALD must identify those who have the resources and as well as those who have the technical capacity to deliver the desired activities in order to reach the objective of the Action Framework.

The following recommendations emerged during the development of this Action Framework:

1. There is a strong and urgent need to review the current **labour force within ALD**. A review should be undertaken by a Human Resource management expert and include consideration of creating new posts, reviewing current job descriptions, salaries and the number of technical and administrative roles needed to deliver the Division Plans. The review should include putting in place monthly, annual and biannual professional development programs and internal advancement and career progression to build and retain a well-qualified staff.

2. ALD needs to promote **diversification of cash crops** and explore other potential cash crops locally (apart from copra production) in order to diversify income generation sources for outer islands.

3. **Seed storage** (especially of Open Pollinated seed) for vegetables and other local fruit trees must be in an adequate storage facility so that they are always available when farmers need them. Currently, there is insufficient seed storage.

4. Write basic guidelines on **animal and crop management production systems** in I'Kiribati language. Information needs to be up-to-date, and accessible to farmers to maximise their productivity.

5. The Livestock Production and Management must always **maintain local stock breeding** and new bloodline of exotic pigs, poultry, duck and coat for breeding and selection to support small-scale livestock farmers.

6. Feed shortage is an ongoing issue both to LPAW of ALD and small-scale livestock farmers always face, and therefore there is a need to have a **feed storage infrastructure** to be in place to sustain livestock production. The support from donor partners in this programme is urgently needed to achieve our objective.

7. Livestock waste management is also a threat to **ground water contamination** and therefore, there is a need to have a policy addressing this important issue with support to farmers by providing a low cost and manageable dry litter poultry and pig pen.

8. Biosecurity threats to both crop and livestock cannot be over emphasized therefore, there is a need to have the right **pest control measures**

and upgraded machine at all entry boarder to support Biosecurity officers to detect pests and disease from introduced materials.

9. Agri-business needs to be included as one of the programs for ITE and therefore, there is a need for training ITE staff in **agri-business development.**

10. **Support to KOFA** must be well defined and clearly detailed with a signed MOU for transparency and accountability.

11. **Agri-tourism development** is a new area and ALD should explore this as an avenue for farmers incentive to take their farming activity seriously as a source of generating income and as well as provide employment opportunities and support the tourism industry.

12. ALD to develop policy that will lead to creating an enabling environment for **youth and single parent engagement** in small-scale farming that will contribute to achieving KAS objectives by empowering them to become productive for themselves, their family and their community.

13. Broader treatment of domestic food systems and **food system management** is an area of need, where ALD define their role in the food systems in place and target activities and projects to deliver their responsibilities eg. Enhanced food production. The gap in this important area may be associated with the low volume of local agriculture products, fragmented and isolated subsistence farmers, and distance to markets.

14. There is no **quality or price control** mechanism in place for local food sold at roadside market or those who goes around from house to house except for those who sell their food to students and workers during business hours.

15. A **policy review** should be undertaken by the MELAD Senior Management team. The review should include training on policy familiarisation and cover policy updates and topics including idle lands, government land-use planning, availability of planting materials, livestock breeding, pest control and animal and plant health.

16. Finally, a commonly overlooked area is **applying for and programming budgets** for delivery of training, awareness programs and provision of technical advice to farmers. Budgets need to be matched to annual work plans, and include the activities in this Action Framework and the ALD Strategy. Also, budgets need to increase annually, responding to inflation and changes in national and regional markets.

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