

AGROFORESTRY PILOT PROJECT ON THE ISLET OF FUNAFALA – FUNAFUTI, TUVALU 2021-2022



FINAL REPORT

Aided by the Trade Department under its development program
“Enhanced Integrated Framework [EIF]”

Kaupule Funafuti
Luapou, Funafuti
Tuvalu

Executive Summary

This report summarizes the result of the actual performance in achieving the agroforestry pilot project according to its timeframe, and expenses utilized under the approved budget summary. The aim of the project is to establish a stable local food production system that enhancing community food security to sustain peoples' livelihood. This is a long-term community-based food security development sustainability. The enhancement of this project, entail a systematical protocol to guide those directly involve and foremost the field team in achieving major elements of the work packages in the entire process. Therefore, an operational structure was in place to ease communication link, supervision, and delegation of task when necessary.

There were two major challenges experienced during the project period in bullet-points below:

- The breakdown of the excavator with little attention given by the government institution responsible the Waste Management Department the problem remains unsolved
- A coincidence of Storm and heavy rain at the inception of the project late December to January 2022, which distorted the project momentum. Inevitably such situation is beyond our human control.

The visit of the Australian representative from the High Commissioner's office and the representative from the Taiwanese Embassy to the project site, a request for a new excavator putted forth to the Australian representative by the kaupule for development & planning on behalf of the kaupule and Falekaupule to continue the project at a larger scale. The other alternative of securing an excavator is to establish a good working relationship between the Waste Management Department and the project operator to enable use the machine at the project site.

The application of new methodologies in growing local edible fruit trees such as coconut trees, breadfruit trees, pandanus trees, and other edible fruit plants like felo, and pawpaw for the first time on an infertile sand, in which the sand is extremely sandy and flooded with sea water during high tide is a genuine test to the project. For that reason, the construction, composting, planting, and irrigation in such context was under technical experiment with a close observation on plants' growth. The plants you see in this document are three months old. Most of the coconut trees are the hybrid of Fiji-tall and Malayan-dwarf with special treatment to bear fruits at the height of 1meter after 3 years from the year they were planted. For breadfruit trees pruned at the height of 2meters to keep them at that height and to bear fruits at the same height.

The financial component of the project was well spent on all required project materials and workers pays. The financial statement is appendixes to this report which does reflects a clear picture of how the project money utilized. The proper managing of the agroforestry system the operator will generate income from the produces and the landowners will also have equal share of the produces.

Importantly, is keeping the same field workers on this pilot project to continue with the project expansion, since they have gained a fair knowledge and skills on the technicality of the agroforest system. In such context requires dedication and demanding work in achieving goals by having abundant of local produces that is more than sufficient to sustain the residing population livelihood and to the future generation. The other legitimate factor is to have a pile stock of these produces to safeguard our people from the impacts from major global disasters that our people are challenges with, such as climate change and rising of sea level and boarder restriction measures to prevent the entry of the pandemic COVID19.

Introduction

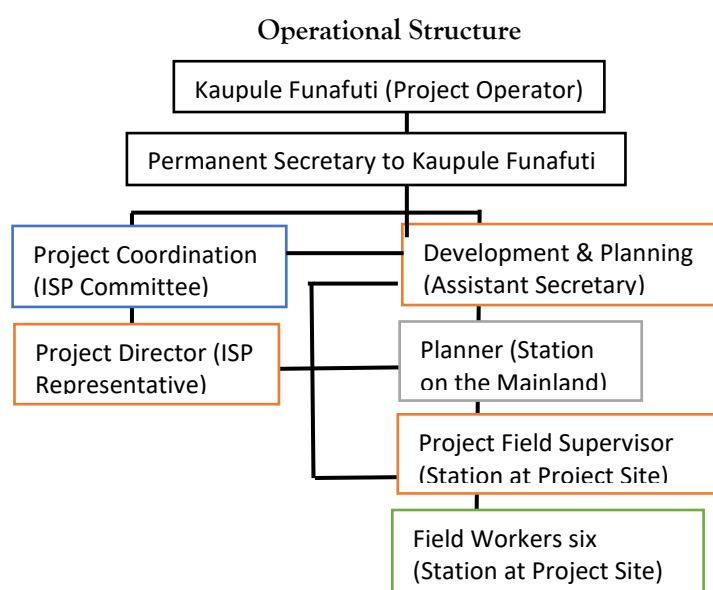
This final report incorporates a detailed summary of the project activities and its budget performance for acquittal requirement. However, the scope of the project was given a benchmark against its financial strength, and the operator's functional ability to achieve its timeline. The agroforestry project on Funafala is one major component of the Funafuti Community food security development initiative to sustain peoples' livelihood. Of course, the alarming concerns over the increasing number of non-communicable diseases result from the lack of local healthy food, as most consumers are dependent on foreign food and beverages. The problem of inundation of sea water due to poor water lens with the constant impacts of climate change and rising sea level and boarder restrictions, efforts to enhance of landscaping of poor infertile soil to grow more local food was resolved by the Tausolima in 2020. The cultural and traditional strategy gives support in the replanting scheme on a large scale. That means, all the islets of Funafuti and the mainland are inclusive in the rreplanting scheme with all editable trees and plants.

However, while progressing on the project preparation on food security at a larger scale, the ISP Committee sought funding from the government through the department of Trade, and the project request for the sum of Aus\$40k under the Enhanced Integrated Framework (EIF) granted approval. The project fund was then available to the project operator (kaupule Funafuti) in the final quarter of the year 2021, then implementation stage begins in the final week of November 2021. But due to strong wind with heavy rain in December 2021 to January 2022 and the breakdown of the excavator simultaneously, the project operator decided to push the project activities forward once the excavator runs. Despite these shortfalls, which may prolong the time stranded, the kaupule member responsible for developments immediately shifted to the project site to assist establish a contingency plan ensuring the field works persistently progressing with flexibility on the initial timeframe.

Project Functional Management Protocol

The project initiator on behalf of the recipient (Funafuti people) developed a concept note on one component of our community food security development titled 'The Funafala Agroforestry' together with its budgetary component, which includes all costs of items and activities plus wages. The project workplan, plan of action and timeframe and technical dimensions for all activities are made available to those involved and to strictly follow. Despite the sophisticated formation of the project in terms of its physical and technical reality, the field team continued to comply with given protocol and thoroughly followed the technical illustrations mapped out. Compliance to these functional tools, such as with task plans, together with the given work packages, the entire process in the system seems astonishing. One effective functional mechanism in achieving the project was the deliverable measures by key actors in the project operation structure. Key actors in the making of its finale are in the setting below.

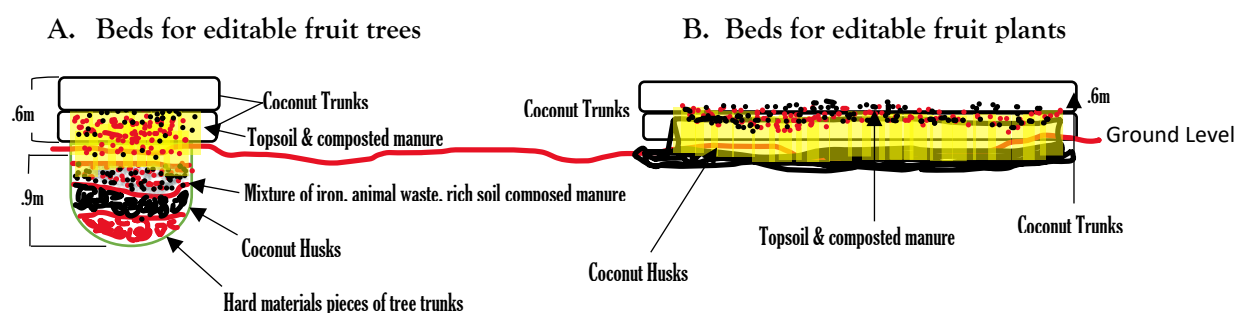
Figure 1.



Construction, Composting, Planting & Irrigation

The nature of the agroforestry project is no different from the traditional knowledge and agricultural understanding of growing edible fruit trees like coconut trees, breadfruit trees, pandanus trees, and plants like felo (Dyer's fig), pawpaw, banana etc. in a context where natural organic matter and land formation that naturally produce such trees. The experts from the agricultural department assisted the project by providing technical assistance, such as physical demonstration on how to arrange layers of varieties of organic manure in pits. The elderly folks of Funafuti also shared their experiences on how to grow these local plants in such an infertile land formation. However, from close observation of the project site, the most obvious and shared challenges were the inundation of saltwater, limited rich soil and compost manure. Therefore, the field team experimented with a design type of bedding that avoids the impacts of inundation of sea water, in which the beds raised above the ground level to .6m and .9m below ground level. The figure 2 below shows the laying of different organic matter and mixture of animal materials with topsoil as an early composition for juvenile plants. This planting model applies to our local edible fruit trees like coconut trees, breadfruits, pandanus, felo, except for edible fruit plants like pawpaw, banana, melon, and others. For pawpaw, melon, and other vegetables, the beddings are just raised from ground level and filled with topsoil and compost manure. Having a shredder at the project site provides efficient compost aggregation. On infertile land at the project site, good compost needed to grow healthy crops.

Figure 2. Work Packages – Construction, Composting & Planting



The field team planted seventeen coconut trees and 7 breadfruit trees and to make up the 9 beds that were left undone due to the breakdown of the excavator, the field team, on the advice from the office responsible for development, substituted edible fruit plants or vegetables like pawpaw, melon, cucumber, sweet potatoes and felo. So, the operator of the Taiwanese gardens on the islet of Funafala is growing for the agroforestry project. The pawpaw sprouts are ready to be transferred from the Taiwanese garden to our nursery before transplanting to their individual beds towards the second week of June 2022, and likewise melons and cucumbers.

Irrigation System

The irrigation system is one major component of the agroforest plants to install in the second quarter of this year 2022. In the meantime, the field team is doing the watering manually in the early morning and before sunset each day. The kaupule Funafuti, who is also the operator of this project, is currently building a multi-purpose shed large enough to stockpile project materials, and the agriculture and livestock will occupy a substantial portion of this shed, and importantly, a large water catchment with 10 water tanks with a capacity of 10,200liters per tank for the irrigation system.

The figure 3 below shows the images of the agroforestry development at the project site on Funafala.

Figure 3. Images of Growing Plants

A. Coconut tree



B. Breadfruit Tree



C. Pawpaw Plant



The planting of plants started in late January to February 2022, except the pawpaw that planted in March 2022. The plants look extremely healthy, and at this stage it requires proper nurturing with great care for those plants. We have not experienced any ailments common to plants yet. The field team are to ensure to have a close observation of these plants each day and report to the office of the development and planning of any suspicion on unusual changes to the plants' colour and other defects.

Figure 4. The Multipurpose Shed & Nursery

A. Shed under construction Funafala



B. Agroforestry Nursery



C. Beddings for Melons & Cucumbers



D. Water Tanks for irrigation System



The challenges and Issues

As often with developments on new lands, the challenge faced is landowners who are reluctant to offer their land to the project, and later seeing the healthy blooming of plants planted changed their minds. The unattendance of the operator of the excavator remain a serious setback to the project despite number of reminders with no responses. For this reason, the field team moves on to create other beds manually on the ground surface to substitute for the undug pits. One common challenge that we faced during the early implementation stages of the project was the strong wind and heavy pouring of rain from December to January 2022 that affected the pace of the field work. Land transportation was one of the challenges faced by the project at its initial stages, especially in the transporting of construction materials for beddings such as coconut trunks, topsoil, manure, plants and building materials.

Overcoming the Challenges

The Kaupule for developments with the secretary of the kaupule clearly explained to landowners that the project will benefit both the landowners and the kaupule without any cost to landowners, simply because the kaupule is doing the work for them and continues managing the trees and plants at yield time. The distressing issue about the excavator can only resolve by purchasing one medium excavator of 10 to 15 tonnage for the project operator. While arranging for a new excavator, Kaupule and the Ministry of Local Government & Agriculture to revive its mutual engagement on the use of the SWAT excavator on the project site. The project purchased a 5wheeldrive tricycle as land transport and it is extremely useful to the project and to other similar developments on the islet and the community as well since there are no cars on the islet. Below is the image of the project vehicle, shredder, and our field team at the site of the project.

Figure 5. Shredder, Compost Manure & 5Wheelcycle



Size of the Project Areas

The agreed dimensions of the project area are over 200 meters in length, and it runs alongside the main road from the centre of the settlement to the northern end of the islet. The total length of Funafala islet is approximately two kilometres and its land formation has a first layer of flimsy rich topsoil, and the second layer with a mixture of stone and gravel, and the third layer is white sand. The woodland has a diversity of agroforest species of coconut trees, wild pandanus trees and non-edible flowery trees like pua (beach gardenia), nonu (Indian Mulberry), and more herb and shrub species.

Conclusion

The Funafuti agroforestry is an ongoing development if landowners allow replanting on their lands. With the huge population of about seven thousand residing on Funafuti, it requires public entities to support any means to build together a long-term sustainable food security. While our development partners remain our potential donors, as they have realized the severity of Tuvalu when there is a shortage of foods from overseas and little support from our local products. Despite efforts to maximize available resources to set up food security at a larger scale, there is truly little to offer due to the scarcity of resources. Therefore, it is extremely important that the national government, through the ministry of local government & agriculture, supports communities for their food security by elevating its budget allocation to achieve these national Key Strategic Actions [KSAs 2.8.2, 3, 4; 4.16.2], which also in alignment with the Funafuti ISP Key Strategic Action 7.1.

To conclude, the ISP committee on behalf of the Falekaupule & Kaupule Funafuti would like to express their heartfelt thanks to the Department of Trade for its genuine support in financing the Funafuti community agroforestry pilot project. The inception of the project was the first of such a kind and remarkably admired by members of our community, especially the Matais, who are keen planters. Our big 'fakafetai lasi' to the field team and the supervisor for the magnificent work well done.

*Property of the Kaupule Funafuti
Luapou, Funafuti
Tuvalu*

**AGROFORESTRY
BALANCE SHEET
as at the end of 22nd June, 2022.**

Assets

Opening balances Cheque Account 40,000.00

Total Assets \$ 40,000.00

Less Expenses

Vehicle 5,500.00

Transport & Fuel 2,484.89

Materials 3,592.60

Casual Wages 27,892.25

Total Expenditure \$ 39,469.74

Closing balance at the 22nd of June,2022. \$ 530.26

Agroforestry Cheque Account Expenses

Cheque number	Payable to	Particular	Amount				Total Amount	Remarks
			Wages and Allowances	Assets	Transport	fuel		
439201	Mackenzie Trading limited	Purchase of 1 tricycle		\$ 5,500.00			\$ 5,500.00	Cancelled
439202	Mackenzie Trading limited	Purchase of 1 tricycle		\$ 5,500.00			\$ 5,500.00	
439203	Pacific Energy	Purchase of fuel				\$ 775.81	\$ 775.81	Cancelled
439204	JY Ocean Trading PTY LTD	10 pairs of working gloves and 1 shovel		\$ 89.00			\$ 89.00	
439205	Kaupule Funafuti	Register of tricycle		\$ 8.60			\$ 8.60	
439206	Tuaga and others	Wages	\$ 1,582.50				\$ 1,582.50	
439207	Penina O'brien	Reimbursement of Cash	\$ 216.00				\$ 216.00	
439208	Funafuti Holding Limited	80 medium size empty bags		\$ 160.00			\$ 160.00	
439209	Tuaga and others	Wages	\$ 1,296.00				\$ 1,296.00	
439210	Sulani Trading	Fuel				\$ 61.00	\$ 61.00	
439211	Tuaga and others	Wages	\$ 1,140.00				\$ 1,140.00	
439212	Pacific Energy	5ltrs Pacific Gold Wind oil				\$ 27.82	\$ 27.82	
439213	Tuaga and others	Wages	\$ 1,140.00				\$ 1,140.00	
439214	Hire of Tainauti	Transportation of Building Material, tricycle and 2 large bags of coconut			\$ 300.00		\$ 300.00	
439215	Tuaga	Wages	\$ 264.00				\$ 264.00	
439216	Tuisavaka Sakalia	Wages	\$ 240.00				\$ 240.00	
439217	Chris Poopu	Wages	\$ 216.00				\$ 216.00	
439218	Simeona Tekena	Wages	\$ 216.00				\$ 216.00	
439219	Ianuali Sakalia	Wages	\$ 216.00				\$ 216.00	
439220	Saamu Peniasi	Wages	\$ 216.00				\$ 216.00	
439221	Tuaga and others	Wages	\$ 1,167.75				\$ 1,167.75	
439222	Funafuti Holding Limited	15 Medium size Bags		\$ 30.00			\$ 30.00	
439223	Polau and Others	Allowances	\$ 475.00				\$ 475.00	
439224	Tuaga	Wages	\$ 220.00				\$ 220.00	
439225	Tuisavaka Sakalia	Wages	\$ 200.00				\$ 200.00	
439226	Chris Poopu	Wages	\$ 180.00				\$ 180.00	
439227	Simeona Tekena	Wages	\$ 180.00				\$ 180.00	
439228	Ianuali Sakalia	Wages	\$ 180.00				\$ 180.00	
439229	Saamu Peniasi	Wages	\$ 180.00				\$ 180.00	
439230	Sulani Trading	Fuel and Building Material for the nursery		\$ 3,190.00		\$ 247.78	\$ 3,437.78	
439231	Tuaga and others	Wages	\$ 1,068.00				\$ 1,068.00	
439232	Tuaga and others	Wages	\$ 1,140.00				\$ 1,140.00	
439233	Tuaga and others	Wages	\$ 1,282.50				\$ 1,282.50	
439234	Sulani Trading	Petrol and Hi tide				\$ 140.09	\$ 140.09	
439235	Funafuti Holding Limited	30 small size bags@.50 per bag		\$ 15.00			\$ 15.00	
439236	Tuaga and others	Wages	\$ 1,140.00				\$ 1,140.00	
439237	Tuaga and others	Wages	\$ 1,282.50				\$ 1,282.50	Cancelled
439238	Tuaga	Wages	\$ 242.50				\$ 242.50	

439239	Tuisavaka Sakalia	Wages	\$ 225.00				\$ 225.00	
439240	Chris Poopu	Wages	\$ 202.50				\$ 202.50	
439241	Simeona Tekena	Wages	\$ 202.50				\$ 202.50	
439242	Ianuali Sakalia	Wages	\$ 202.50				\$ 202.50	
439243	Saamu Peniasi	Wages	\$ 202.50				\$ 202.50	
439244	Tuaga and others	Wages	\$ 1,140.00				\$ 1,140.00	
439245	Tuaga and others	Wages	\$ 912.00				\$ 912.00	
439246	Tuaga	Wages	\$ 198.00				\$ 198.00	
439247	Feta Sakalia	Wages	\$ 162.00				\$ 162.00	
439248	Katarina Tuaga	Wages	\$ 162.00				\$ 162.00	
439249	Tuaga and others	Wages	\$ 1,086.00				\$ 1,086.00	
439250	Sulani Trading	Petrol and Hi tide				\$ 1,095.00	\$ 1,095.00	
439251	Tuaga	Wages	\$ 220.00				\$ 220.00	
439252	Tuisavaka Sakalia	Wages	\$ 160.00				\$ 160.00	
439253	Ianuali Sakalia	Wages	\$ 162.00				\$ 162.00	
439254	Simeona Tekena	Wages	\$ 180.00				\$ 180.00	
439255	Saamu Peniasi	Wages	\$ 180.00				\$ 180.00	
439256	Feta Sakalia	Wages	\$ 180.00				\$ 180.00	
439257	Katarina Tuaga	Wages	\$ 180.00				\$ 180.00	
439258	Tuaga	Wages	\$ 220.00				\$ 220.00	
439259	Ianuali Sakalia	Wages	\$ 180.00				\$ 180.00	
439260	Simeona Tekena	Wages	\$ 180.00				\$ 180.00	
439261	Saamu Peniasi	Wages	\$ 180.00				\$ 180.00	
439262	Feta Sakalia	Wages	\$ 180.00				\$ 180.00	
439263	Katarina Tuaga	Wages	\$ 180.00				\$ 180.00	
439264	Tuaga	Wages	\$ 220.00				\$ 220.00	
439265	Simeona Tekena	Wages	\$ 160.00				\$ 160.00	
439266	Ianuali Sakalia	Wages	\$ 144.00				\$ 144.00	
439267	Danny Kaitaika	Wages	\$ 144.00				\$ 144.00	
439268	Saamu Peniasi	Wages	\$ 180.00				\$ 180.00	
439269	Feta Sakalia	Wages	\$ 180.00				\$ 180.00	
439270	Katarina Tuaga	Wages	\$ 180.00				\$ 180.00	
439271	Tuaga	Wages	\$ 220.00				\$ 220.00	
439272	Simeona Tekena	Wages	\$ 180.00				\$ 180.00	
439273	Ianuali Sakalia	Wages	\$ 144.00				\$ 144.00	
439274	Danny Kaitaika	Wages	\$ 180.00				\$ 180.00	
439275	Filemu Kaitaika	Wages	\$ 180.00				\$ 180.00	
439276	Feta Sakalia	Wages	\$ 180.00				\$ 180.00	
439277	Katarina Tuaga	Wages	\$ 180.00				\$ 180.00	
439278	Tuaga	Wages	\$ 220.00				\$ 220.00	
439279	Simeona Tekena	Wages	\$ 200.00				\$ 200.00	
439280	Ianuali Sakalia	Wages	\$ 144.00				\$ 144.00	
439281	Danny Kaitaika	Wages	\$ 180.00				\$ 180.00	
439282	Filemu Kaitaika	Wages	\$ 180.00				\$ 180.00	

439283	Katarina Tuaga	Wages	\$ 225.00				\$ 225.00	
439284	Feta Sakalia	Wages	\$ 225.00				\$ 225.00	
439285	Sulani Trading	Petrol and Hi tide				\$ 613.20	\$ 613.20	
439286	Funafuti Holding Limited	Empty bags		\$ 100.00			\$ 100.00	
439287	Tuaga and others	Wages	\$ 1,410.00				\$ 1,410.00	
439288	Tuaga and others	Wages	\$ 1,161.00				\$ 1,161.00	
439289	JY Ocean Trading PTY LTD	Hammer Drill		\$ 519.00			\$ 519.00	Cancelled

Total Cheques prepared		\$ 29,174.75	\$ 15,111.60	\$ 300.00	\$ 2,960.70	\$ 47,547.05
Total Cheques cancelled						\$ 8,077.31
Total Fund Provided						\$ 40,000.00
Total Expenditure to date						\$ 39,469.74
Balance To Date						\$ 530.26