

OceansWatch Sustainable Livelihoods Report

Temotu Province, Solomon Islands, 2014



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Acronyms

OWSI	OceansWatch Solomon Islands
OWNZ	OceansWatch New Zealand
CEPF	Critical Ecosystem Partnership Fund
VCO	Virgin Coconut Oil
NZ	New Zealand
NZESI	New Zealand Embassy Solomon Islands

Maps of program area



Socio economic climate in Temotu.

In rural areas of the Solomon Islands unemployment is 95% for men and 98.5% for women. Options for jobs are very few other than teachers, local government representatives, NGO's (World Vision in Temotu), Nurses and occasional National Government representatives such as Rural Infrastructure Development Program (RIDP). The Temotu Province has the lowest per-capita income of any province in the Solomon Islands (Government Census).

Other than the above mentioned jobs, opportunities for earning money for basic necessities are: Selling vegetables and fruit, beetle nut, pigs, chickens, fish, Trochus or Beche de Mer, building materials such as mangrove stakes and sago palm roofing, and some families have members living and working in Honiara who send occasional food supplies or cash back to the village.

Unemployed people survive by subsistence farming and usually fish for their protein supply. Subsistence farmers have no means of earning sufficient income for basic financial needs as there is only a very small market for excess fruit and vegetable production. Some fish is sold locally but there is no export market. Most families grow pigs for sale but there is insufficient feed available to fatten more than one or two a year. Pigs can be sold locally for ~\$500 or can fetch ~\$1,000 in Honiara. Previously most people made some Copra to earn a small income but the price is low and transport costs to Honiara are so high that the price fetched in Temotu is such that very few people will do the work to produce it. World Vision has assisted some communities set up honey production, which could produce a small income for some. We have observed that honey is sold within some villages and used medicinally although some has been seen on sale in Lata.

Currently there is one logging operation in Temotu, on Vanikoro where a few men are employed for SBD\$175pw (NZ\$30pw).

Sustainable livelihood opportunities

Milling

Nende, Utapua and Vanikoro all have large areas of native forest with Kwila, Rosewood, Pacific Kauri and Vitex of millable size. Some communities have chainsaw mills but many are no longer working due to spares and maintenance issues. A major problem is transport, as shipping is intermittent and expensive (SBD\$200 per M³ to Honiara). It may be possible to develop sustainable timber milling however it will require outside expertise to develop management plans. OceansWatch has a buyer in New Zealand prepared to pay above the rates that are currently available in the Solomon Islands.

Plantation timber

Some plantation timber has been planted but will not be ready for many years.



Honey

A honey program is being run by World Vision, currently for the local market.

Marine

Some marine species may be able to be sustainably exploited however most have already been over exploited (e.g. Green Snail, Sea Cucumber and Trochus). Extensive research, including baseline surveys are needed to identify possible opportunities and monitoring through Catch Per Unit Effort and periodic surveys will be needed.

Mariculture.

In some areas in the Solomon Islands seaweed farming is operating successfully. This has been tried in Temotu but the seaweed was eaten by fish. On Fenualoa nets to exclude herbivorous fish have been tried successfully however the problem then becomes one of algae build up on the nets, which limits light penetration and thus growth rates. A trial to situate a small trial in more rapid current (Mola'a) was started in November 2014 and will be monitored by local users and OceansWatch.

Wild stock enhancement

Wild stock enhancement could be an option to help build sufficient numbers of Sea Cucumber or Trochus to levels that allow sustainable harvest. OceansWatch intends setting up a Sea Cucumber wild stock enhancement trial near Lomlom in 2015. We trialed this in 2013 in Fenulao and found that currents there were too strong. There is a large lagoon with less current near Lomlom that could be more suitable.

OceansWatch Sustainable Livelihood program

OceansWatch policy is to find a truly sustainable way for community members, especially women to earn sufficient income for basic needs and school fees. We concentrate on women as the money women earn is more likely to be directed towards family needs.

Coconut oil

As many coconut trees already exist near all villages and women already know how to make oil we believe that maximizing profit from this sustainable and readily available resource is the best way to develop sustainable incomes in Temotu.

Testing the Market for VCO in New Zealand. Here OceansWatch volunteer Sophie Bone offers taste tests of Virgin Coconut Oil to visitors at a Market stall



Virgin Coconut Oil market.

Over the last few years Virgin Coconut Oil (VCO) has developed a strong market in the developed countries as a healthy cooking oil and ingredient in massage oil and skincare products. OceansWatch directors have strong ties in the NZ health food market and have confirmed that the market for VCO in New Zealand is strong from trials in 2013 and 2014.

History of the VCO program in Temotu

2012

In 2011 we researched who was making VCO in the Temotu district and learnt how it was being made. We purchased ~10 litres to give to colleagues to gauge their reaction, which was very positive. We started to research the market in New Zealand and the health benefits of VCO.

2013

We researched how VCO was being made worldwide and looked at what Food Grade standards we would have to adhere to. We purchased a simple set of equipment and took it to Temotu. We designed our own coconut meat presses. On the Island of Fenualoa we helped form 3 women's and one mixed group to undertake production trials. Altogether we ran 20 trials and gradually determined which system would best suit the environment and resources available. We took into account Food Grade and Organic standards and how the local women made VCO themselves. We carefully recorded all production data and helped the groups to start forming



Preparing free samples of massage oil.

“Conservation and Sustainable Development Association constitutions. We purchased 20 litres of oil from each group and brought it back to New Zealand where we tested to market.

Under our Sustainable Livelihoods program we tested Wild Stock enhancement of Sea Cucumbers. The initial trial pen lasted well and kept the Sea Cucumbers in successfully however after a few weeks a lot of Algale built up on the nets. The current was also strong at spring tides and we felt that eventually the pen might collapse. We dismantled the pen with a view to restarting the program in a quieter lagoon.

2014 program

This year OceansWatch has concentrated on our Virgin Coconut Oil program as we believe the potential for Temotu is excellent. We also did so because funding was made available for equipment from the New Zealand Embassy in Honiara and through the Critical Ecosystem Partnership Fund. We had considered further Sea Cucumber wild stock enhancement but did not have time or funding this year. We continued our research on VCO production techniques elsewhere and compared our trial data with other similar operations. We investigated various Organic standards and chose Organic Pacifica as the most appropriate and comprehensive.

One comprehensive trial set of equipment was purchased for the village of Buma on Vanikoro (Critical Ecosystem Partnership Fund (CEPF)) and one set of commercial production equipment for Mola'a village on Fenualoa (New Zealand Embassy Solomon Islands (NZESI)).

We chose the village of Mola'a as it is a small community who want the profits from the program to go back into community development and conservation rather than to individuals. Also Mola'a is a small community that work very well together and are empowered to become self reliant. We chose Buma, a small village on Vanikoro as when we visited them in 2013 we had a very good reception to the idea of a VCO program. In 2013 we realized that sometimes a program like this can cause jealousy within a community. It is very hard to manage a large group in a program like this due to facility sizes and equipment requirements so larger villages have to self select smaller teams (max 20 persons).



Seaweed farming trials at Tanga, Fenualoa with John Paia.



Buma

In Buma just one person has a paid job, the school teacher. A small income has previously been obtainable from the sale of Green Snail but they have been overharvested. Some Trochus are harvested but they are becoming very scarce. Sea Cucumber have been harvested but due to overfishing the harvesting is now banned. A little unmanaged milling is being done and some families get remittances from family members in Honiara.

In Buma 21 women asked to join the VCO group. We demonstrated the OceansWatch VCO production methodology and the women went on to produce 30 litres of good quality oil during the 9 days we stayed there. The equipment available in Buma was un-mechanised, I.E. all scraping and squeezing was done by hand. Before departure we discussed how much VCO the women would like to produce weekly. We left them sufficient containers for this amount (50 litres) and picked it up prior to leaving the Solomon Islands.

Between them the women in Buma own >3,000 coconut trees, sufficient for each to earn ~SBD\$5,900 per annum, should they wish to maximize production.



Virgin Coconut Oil after overnight fermentation and ready to be scooped into settling bowls.

Participants, Buma
Emma Ramoli
Tina Aluramo
Joselyn Ndni
Agnes Muja
Joselyn mamuli
Sera Navlaro
Sera Gamou
Elizabeth simevio
Jenny Sica
Elen Bangora
Melot Simbalem
Alice Nimelie
Anna Tua
Jesse Keoramo
Doreen Io
Emilie Kofana
Evelyn Tatali
Clara Gamen
Stella Mgiro
Milford Tapoi
June Tolena

Mola'a

We had done a trial in Mola'a in 2013 so knew that the VCO group there was enthusiastic and had sufficient trees for production. For Mola'a we supplied a mechanised system paid for by the New Zealand Embassy, Honiara. This system uses mechanical coconut meat presses and electric scrapers. The scrapers are powered by a diesel generator but plans are to replace the generator with a solar system when funding allows. No one has a paid job in Mola'a, like Buma the population are all subsistence farmers with some Honiara family remittances. Green Snail and Trochus were fished out long ago and Sea Cucumber are scarce and there is a national moratorium. OceansWatch is assisting Mola'a set up a small eco-tourism venture and will help them trial seaweed farming in 2015.

We visited Mola'a on several occasions whilst we were in the area. During this time they produced 80 litres of grade 1 VCO. Further production was constrained by the lack of fresh water, see Lessons Learned below.

In Mola'a 11 families own >2,000 trees, sufficient to earn each family SBD\$11,863 per annum should they wish to maximize production.

Participants
John Tali
Wilson Lui
Dorre Nolube
Japhet Tavaka
Agnes Nebo
Dorah Sipala
John Laula
"Professor" Hadley
Robinson
John "Spiderman" Tealava
Ellen



OceansWatch CEO, Chris Bone showing Mola'a community the new electric scrapers donated by the New Zealand Embassy, Honiara.

Ngadeli

The village of Ngadeli is facing extreme Climate Change pressure as the village is already being inundated by King tides. It is likely that the community will have to move to higher ground before too long so sustainable economic development is vital for this community to enable relocation. Luckily they have coconut trees on some higher ground on the adjacent Island of Lomlom.

In Ngadeli we supplied a small trial set of equipment (shared by Otelo village) to gauge enthusiasm for the project. 20 women participated and produced 15 litres of grade 1 coconut oil during 2 training/production sessions. The women in Ngadeli own 2,307 coconut trees between them, sufficient to earn SBD\$11,067 each per annum should they choose to go into full production.

At the end of the program they requested a set of commercial equipment to start full production in 2015.

Participants, Ngadeli
Doreen Moleki
Jenny Daiwo
Lilianne Leiau
Salome Pota
Alice Lameli
Salome Nenubo
Josaphine Langale
Rebecca Otto
Maey Paikai
Monica Nalive
Margaret Takona
Alice Basilwo
Janelle Satu
Wendy Daiwo
Alice Paninga
Margaret Tilialla
Jocelyn Molik
Janet Sinoe
Emilie Damole
Jocelyn Naevas



Preparing coconuts for scraping, Ngadeli

Otelo

In Otelo we supplied a small trial set of equipment (shared by Ngadeli village) to gauge enthusiasm for the project. 25 women participated and produced 20 litres of grade 1 coconut oil during 3 training/production sessions. The women in Otelo own 863 coconut trees between them, sufficient to earn SBD\$3,043 each per annum should they choose to go into full production.

At the end of the program they requested a set of commercial equipment to start full production in 2015.

Participants, Otelo
Joanne Laulae
Miriam Olivenge
Rosemary Langa
Emily Mala
Margaret Mole
Florence Stakinga
Alice Nave
Hilda Boyne
Mary Malpon
Nora Teponga
John Bane
Lilian Bena
Pascola Suri
Sarah Sale
Lydia Tapkgei
Margaret Konga
Veronica Nwake
Elisabeth Nawa
Josaphine Lakloa
Emma Pakalewa
Mary Lono
Daphine Tolenga
Jenny Noni
Rachel Ngauwi
Dorothy Nalupongi



Training in Otelo



Lessons learned

One of the electric scrapers we used in Mola'a had saw like blades and revolved at ~2,500 rpm. One of the operators pushed a coconut onto the blade too hard and the blade embedded into the nut, which the operator then had to let go of. This was dangerous so we did some more training and all children were kept away from the machinery by a rope barrier. All machine operators used gloves and safety glasses at all times.

There were jealousy issues in one of the communities where we worked in 2013. We had limited numbers in each group to 20 persons but this meant some were excluded initially. In future we shall allow everyone to be involved and let them self select into teams. One team will be trained then they can train the next and so on.

We realized in Mola'a that at times there would not be sufficient rain water for processing so we are now concentrating on increasing their harvesting and storage capacity.



Mola'a coconut oil kitchen built by the people of Mola'a village, Fenualoa, Temotu to house the equipment donated by New Zealand Embassy, Honiara.

Conclusion

The program was enthusiastically taken up by all the participants. Even without mechanization participants made good amounts of VCO. Nearby villages showed considerable interest and all participating villages requested more equipment to expand their programs. Most villages have more coconut trees than the groups of women would have time to process given the amount of time they have available, bearing in mind child rearing and gardening responsibilities. In Mola'a the group was mixed, with men doing some of the work, in particular the men enjoy operating the machinery especially the electric scrapers. We think that as villages are provided with more equipment the men will lend a hand, thus allowing more production. However the amount of money that can be earned is already very significant compared with existing income opportunities.

In Mola'a where they have been producing VCO for 2 years the community seem to want to settle into doing about 3 production sessions per 2 weeks with a few weeks off for Christmas and religious festivals etc. Given full mechanization, some help from the men and sufficient power and water availability we expect that mature village programs will process between 25 and 50 nuts per person 3 times per 2 weeks, resulting in 72 production sessions per year. This would generate between SBD\$2,623 and SBD\$5,426 per year, per family, ample to pay most school fees.



Kids helping out, Mola'a village

Temotu Virgin Coconut Oil yearly potential earnings

Weeks worked	48
Sessions per week	1.5
Sessions per annum	72

All figures in Solomon Dollars

	Manual 25nuts/session	Electric 50 nuts/session	
Per person per annum			
Days worked	72	72	1 day = 1 processing session
Coconuts processed per session	25	50	
Milliliters of oil per nut	40	40	
Oil produced in litres	72	144	
Payment/litre (2015 estimate)	35	35	2013 = 25, 2014 = 30
Income from coconut oil	\$ 2,520	\$ 5,040	
Waste coconut flesh for pigs (nuts)	1800	3600	
Days 1 pig can be fed from above	240	480	
Value for pig at local price	\$ 395	\$ 789	Mature pig worth 600
Income including pig sales	\$ 2,915	\$ 5,829	
Community donation (10%)	\$ 291	\$ 583	For use of community facilities
Net income per year	\$ 2,623	\$ 5,246	
10 members			
Community contribution	\$ 2,915	\$ 5,829	
Total earnings group	\$ 26,231	\$ 52,461	
20 members			
Community contribution	\$ 5,829	\$ 11,658	
Total earnings per group	\$ 52,461	\$ 104,923	

Potential earning for Temotu

Assumptions

All villages to get Solar power for VCO equipment

Set up costs paid through Aid donations

Average members per group	20
Annual costs for business licenses	2000
Villages in 2015	6
Villages in 2016	22
Villages in 2017	38
Villages in 2018	54

Year	2015/16	2016/17	2017/18	2018/19
Villages	6	22	38	54
Donations to community	\$ 69,948	\$ 256,478	\$ 443,007	\$ 629,536
Profit pre tax	\$ 617,536	\$ 2,308,300	\$ 3,987,064	\$ 5,665,828



Recommendations

OceansWatch believes that the Virgin Coconut Oil program has excellent potential to develop into a strong sustainable economic development program for the coastal villages of the Temotu Province. We shall seek continued grant support and plan on working closely with the Temotu Provincial government to ensure that there is a supportive and enabling environment for the program to develop. We expect to work closely with World Vision Temotu with the aim of integrating our VCO program with their women's saving scheme.

OceansWatch will seek grant assistance to develop processing, marketing and value adding facilities in New Zealand and will help the Temotu communities to develop a local market for the oil and other products such as soap. We have had discussions with producers in Vanuatu who would like to sell us VCO too and other villages in Vanuatu where we work would like to join the program.



Scoping the virgin coconut oil from the curd after overnight fermentation, Mola'a village, Temotu

Acknowledgments

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Special thanks to Harry Noel of World Vision Temotu, John Paia, Honourable of Fenualoa Ward, John Laulae from Mola'a for his hard work and enthusiasm, Lawrence Nodua and Nelson Nyiede of OceansWatch Solomon Islands.

Thank you especially to the 77 women who participated in this program and to the families that helped them and the Chiefs of all the villages that embraced and supported the program. We look forward to working with you all again.

This program would not have been possible without the financial support of the Critical Ecosystem Partnership Fund and the New Zealand Embassy, Honiara.



Coconut press trials, Tuwo village, Fenualoa, 2013