

ECONOMIC AND FINANCIAL ANALYSIS

A. Introduction

1. Economic and financial due diligence for the Samoa AgriBusiness Support Project followed the *Financial Management and Analysis of Projects*¹ and *Guidelines for the Economic Analysis of Projects*,² both published by the Asian Development Bank (ADB). The project is non-revenue generating under ADB guidelines.

2. The project's financial and economic sustainability was assessed at the national and project levels. The financial analysis aims at determining the financial viability and incentives for the partner companies and other direct stakeholders to implement expanded agribusiness investment programs with the benefit of project support. The economic analysis aims at confirming the project's overall viability and its contribution to Samoa's wider social and economic development objectives.

B. Macroeconomic Context

3. While Samoa demonstrated remarkable resilience in recovering from the global financial crisis and a devastating tsunami in 2009, it has yet to return to the growth rates of 2000 to 2007. Falling competitiveness, as evidenced by declining market share in export markets (particularly tourism and agriculture) and Samoa's vulnerability to natural disasters, have hindered Samoa's growth. In December 2012, Cyclone Evan caused damage and losses estimated at more than \$210 million, equivalent to around 30% of gross domestic product (GDP). Transport, power and water, and sanitation infrastructure were significantly damaged, as were schools and housing. Recovery and reconstruction of essential infrastructure is expected to take 2 to 3 years.

4. Samoa's agriculture sector is in decline. During the 1990s, the agriculture and fisheries sectors contributed around 20% to GDP.³ By 2012, the sectors' contribution had declined to only 9.7% of GDP, with the agriculture sector contributing 4.5% and the fisheries sector 5.2%.⁴ Food and beverage manufacturing contributed 2.1% of GDP, most of which was beer production. Agri-food imports increased (in current values) from ST123 million to ST217 million from 2002 to 2012, while exports, led by decreasing fish exports, declined from ST61 million to ST45 million, widening Samoa's trade deficit.⁵ Other export-based sectors such as copra, cocoa, and taro have also declined markedly since the 1990s. Despite these trends, the agriculture sector remains the largest employer, with 32.9% of the workforce. The fisheries sector employs a further 4.1% and food manufacturing 2%. In total, these sectors account for 39% of all jobs, with two-thirds of the population dependent on agriculture. Anecdotal evidence suggests there is widespread underemployment in the agriculture sector because the majority of workers are employed as semi-subsistence farmers.

5. The agriculture sector has also performed poorly compared with the industry and services sectors. The real value added of the agriculture sector fell by an average of 2.0% per year from 2010 to 2012. By contrast, the industry sector expanded by an average of 3.1% per year and the services sector by 1.5% per year over the same period.

¹ ADB. 2005. *Financial Management and Analysis of Projects*. Manila.

² ADB. 1997. *Guidelines for the Economic Analysis of Projects*. Manila.

³ Samoa Bureau of Statistics. 2013. *Gross Domestic Product by Sector*. Apia.

⁴ Samoa Bureau of Statistics. 2012. *Agriculture Census Analytical Report 2009*. Apia.

⁵ Samoa Bureau of Statistics. 2013. *Annual Trade Statistics 2002-2012*. Apia.

6. This poor performance of the agriculture sector is in spite of Samoa's comparative advantage in niche markets such as the supply of taro to Samoan expatriate communities, the ability to supply Tahitian limes throughout the year, and the ability to produce certified organic fair trade virgin coconut oil (VCO) in demand by leading global cosmetics firms. Greater support to the sector is required to help realize the potential of these lucrative markets.

7. The agriculture sector's decline greatly concerns the government, its development partners, and civil society because (i) it has led to a major imbalance with agri-food imports exceeding exports by a large and growing margin, and (ii) it contributes to the rising levels of rural unemployment and underemployment and increasing levels of basic needs poverty and food insecurity, predominantly in rural areas.⁶ Given that about two-thirds of the population depends on agriculture for food security and livelihood, there is a strong correlation between the poverty level and the agriculture sector's performance. Consequently, revitalizing the agriculture sector should raise living standards in Samoa.

C. Economic Rationale

8. The economic rationale for proposing a project that emphasizes the agribusiness sector is as follows:

(i) The main rationale for intervention is the shortage of risk capital to small and medium-sized industries (the equity gap) and the lack of technical and management capacity. Loans are difficult to obtain and expensive due to insufficient acceptable collateral, limited own capital, and the banks' overall negative perception of the agriculture sector and enterprise capabilities. Commercial banks require 200% security cover, compared to the regional and global requirement of 150%.⁷ Commercial bank loans to agriculture, forestry, and fisheries projects totaled only 1.3% of total bank loan volume, while 6% of loans went to the manufacturing sector, which includes agribusinesses.⁸ Companies face difficulties securing additional equity as there is no local stock exchange or equity and/or venture capital or provident funds interested in relatively small agriculture and/or agribusiness projects in Samoa.

(ii) An agribusiness survey conducted during project preparation further identified the need for a range of business support services.⁹ Businesses producing for the local or export markets are failing to achieve the required consistent standards to compete effectively and/or satisfy overseas markets' entry requirements. Common weaknesses include (a) lack of technical skills for effective equipment commissioning, production management, establishment and maintenance of strong supply chains, and food safety standards accreditation; (b) inadequate export planning and marketing; and (c) weak business and financial management. With limited technical and business support services available in Samoa, companies report difficulties in understanding and accessing support from regional donor-supported programs.

(iii) Value chain analysis for six commodity groups, in-depth consultations with 22 varied agribusiness enterprises (accounting for a significant portion of the agribusiness sector), and preparation of investment profiles show potentially profitable investment opportunities that are not being activated as a result of the shortage of risk capital, shortage of collateral and lack of capacity.

(iv) The project will address these constraints through a two-pronged approach to (a) improve access to finance for selected agribusiness enterprises to lessen the shortage

⁶ Samoa Bureau of Statistics. 2008. *Household Income and Expenditure Survey Tabulation Report*. Apia.

⁷ World Bank. 2009. *Enterprise Benchmark Survey*. Washington, DC.

⁸ Central Bank of Samoa. October 2013. *Monetary Survey Report*. Apia.

⁹ Agribusiness Survey (accessible from the list of linked documents in Appendix 2).

of capital in the sector and enable bank lending; and (b) provide business support facilities to partner companies to boost their capacity limitations and improve access to markets, including improving raw material supply chains.

D. Least Cost Analysis

9. A detailed analysis of different options was undertaken.¹⁰ The options considered included:

- (i) Regulatory reform and institutional strengthening of financial institutions to improve credit availability.
- (ii) Technical assistance to prepare financing applications, backed by business support services.
- (iii) Business support services to assist companies with established credit lines that could be expanded.
- (iv) A subordinated loan scheme through financial institutions, either a stand-alone fund or linked with a business support services program.
- (v) On-lending (financial intermediation) scheme for commercial banks.
- (vi) Work with other equity investment and/or venture capital funds to facilitate investments, combined with business support services.
- (vii) An equity investment fund established in Samoa and operated by an experienced fund manager with linked business support services.
- (viii) Provision of business support services without complementary financing instrument(s).

10. Of the options considered, a cash collateral facility and a repayable supplemental seed capital facility were considered the most cost effective to address the financing gap for agribusinesses in the short to medium term as they would effectively leverage private sector capital by working through private sector banks. The financing instruments to be deployed are expected to leverage investments of around \$8 million in agribusiness enterprises over 7 years. At the same time, this approach would be complemented by technical assistance to improve technical and management capacity to ensure this capital is effectively deployed.

E. Project Description

11. The innovative approach to financing will be through a financial intermediary modality, adjusted to the Samoan context. The cash collateral will be used to secure up to 50% of the amount financial intermediaries lend to eligible subborrowers for first-time loans and up to 30% for second-time loans. Through this structure, each dollar of collateral will leverage twice the amount of bank lending. The financial intermediary can secure the loan's portion, not cash collateralized, according to its own prudential standards. The maximum loan for subborrowers is \$750,000. This approach should contribute to an overall lower interest rate for the agribusinesses. Supplemental seed capital injections of a maximum \$100,000 per company are intended to improve potential subborrowers' equity positions if they would then be eligible for a loan as the financial intermediary determines. Supplemental seed capital is limited to 25% of total subproject costs, with the remaining part being contributed through the subborrower's own capital and bank financing.

¹⁰ Alternative Option Analysis and Review of Financing Schemes and Lessons (accessible from the list of linked documents in Appendix 2 of the main text).

12. Partner agribusinesses are also to be provided with business support services. These may comprise specific technical or financial management skills and will be identified during the due diligence process of selected agribusinesses. The potential investments in agribusinesses will be determined by the financial intermediary and the facility manager during the due diligence process. A small agribusiness innovation scheme will be made available to businesses for specific short-term purposes.

13. The financial benefits the project generates will include increased profitability of partner companies, increased employment opportunities in the partner companies and their contractors and suppliers, and increased opportunities for farmers supplying agro-industrial raw materials. Direct financial beneficiaries will include partner companies' shareholders, employees, suppliers, and contractors. There will also be new jobs created in agricultural production, processing, and marketing.

14. It is expected that using the cash collateral (as partial guarantee) and seed capital instruments in concert with well-targeted business support services will demonstrate the attractiveness of investment in agribusiness activities, and that investing in such businesses is less risky than previously assessed, which will lead to a sustainable expansion in capital availability. In addition, once the success and creditworthiness of such ventures has been established, the participating commercial banks are expected to support financing agribusiness investments. This will permit more investment with the available amount of equity, leading to growth in total agribusiness investment.

15. Project impacts will be direct for agricultural entrepreneurs who participate in partnerships to grow their businesses and thereby create market and employment opportunities for other beneficiaries. The impacts will be indirect but significant for poor and vulnerable groups, with likely cumulative medium-term benefits by (i) increasing market opportunities to grow and sell produce, and (ii) increasing opportunities for formal employment in agro-industries.

F. Financial Analysis

16. Financial analysis considers only the directly quantifiable financial benefits expected to accrue to the partner agribusiness companies. While there are many possible activities that potential partners may undertake, the investment profiles presented in the value chain analysis (Appendix 2) present three investment profiles as examples of investments likely to be undertaken since this is not yet known.¹¹ The financial analysis is based on the best available cost and benefit estimates developed in consultation with experienced Samoan and international value chain analysts.¹² The details, including all assumptions and information sources, are presented in a supplementary document (footnote 11) and summarized here.

17. Table 1 summarizes the expected costs, benefits and cash flows for taro, Tahitian limes, and VCO, with all investments scheduled to be undertaken during years 1–3. These investments are projected to generate positive financial returns for the investor, but only after an establishment period of at least 5 years (footnote 12). The weighted average cost of capital (WACC) was calculated based on the real after-tax interest rate and implied cost of equity at 8.1%. The estimated financial internal rates of return (FIRRs) over a 15-year project life are

¹¹ Value Chain Analysis (accessible from the list of linked documents in Appendix 2).

¹² Supplementary Tables for the Economic and Financial Analysis (accessible from the list of linked documents in Appendix 2).

estimated at 22% for taro, 23% for limes, and 20% for VCO. This compares favorably with the WACC and the project is considered financially viable. The sensitivity analysis in Table 1 shows that the FIRRs for taro and lime are relatively robust to changes in costs and benefits. VCO is relatively less robust than the other two commodities, with the FIRR falling below WACC if benefits are delayed one year. In general, the FIRRs are more sensitive to delays in benefits rather than costs and benefits being greater or lesser than expected. The likelihood of the costs and benefits differing from expectations by 10% is relatively low given that very conservative assumptions were made with respect to estimated prices and quantities. Similarly the likelihood of benefits being delayed for a year or more is relatively low given the commercial pressures to bring the produce to market as soon as practicable.

Table 1: Financial Internal Rate of Return (%)

Scenario	Taro	Limes	Virgin coconut oil
Baseline assumptions	22	23	20
Costs up 10%	16	15	9
Benefits down 10%	16	15	9
Benefits lagged 1 year	13	9	7
All of the above	4	negative	negative

Source: Asian Development Bank.

G. Estimation of Costs

18. The subproject costs comprise investment and operating costs that have been estimated at financial prices. It is assumed that the investment and operating expenditures are all for new ventures (expansion or diversification) and would have otherwise not been spent. For example, modern processing facilities for taro are currently nonexistent. The subproject comprises a mixture of international and local goods and services that are subject to different price levels. To express these at their economic values in terms of the international price level, the sources of the respective components (whether foreign or local, whether traded or not, and whether taxed or not) are identified, and they are adjusted in light of a standard conversion factor for non-traded goods and services or a shadow wage rate factor for local labor. Non-taxed traded goods and services such as international consulting services are not adjusted, as their economic values are already appropriately expressed by their financial costs.

19. Minimal Samoan value added tax will be paid by the projects due to a zero rating of inputs for export and other agricultural exemptions. An average 7.1% import duty has been removed from imported investment goods and inputs, and a 5% fuel duty has been removed from fuel costs.

20. A standard conversion factor of 0.9 has been applied on the advice of the Samoan Ministry of Finance, with the world price as the numeraire.¹³ This analysis uses a shadow wage rate factor of 0.9 for the country, which reflects a judgment that the labor component of the project has a lower opportunity cost than is implied by the financial labor cost, corresponding to the existence of surplus labor in Samoa. Local labor costs have been adjusted for both the standard conversion factor and shadow wage rate factor. Applying these factors ensures that the economic values of all project components, both foreign and local, are expressed on a common basis at the international price level. All quantities used in the analysis are in constant 2013 values. Benefits are assumed to accrue over 15 years with zero residual value.

¹³ This advice stemmed from discussions with the Ministry of Finance's principal program officer during the fact finding mission in January 2014.

21. Of the \$5 million ADB grant, approximately \$2 million will be allocated to the cash collateral facility and approximately \$1 million to the repayable supplemental seed capital facility. About \$2 million will be allocated to the cash collateral (partial guarantee) facility, and 25% of each partner company's investment will be guaranteed. This means that the project will support \$8 million (ST18.16 million) of agribusiness investments, assumed to be at a rate of \$1.40 million in year 1, \$2.60 million in year 2, and \$4 million in year 3. The remainder will be used to finance facility management (\$1.33 million),¹⁴ provision of business support services (\$0.52 million), and contingencies (\$0.15 million). Partner company contributions to agribusiness investments amounting to \$3.17 million, loans advanced by the commercial banks amounting to \$2 million, and a government contribution of \$0.17 million bring the total project cost to \$10.34 million. Of the estimated \$8 million allocated to finance the implementation of business plans, between 40% and 80%, depending on the nature of the enterprise, would comprise fixed investments.

22. Project management costs will account for only 2% of total project costs or 3.4% of ADB's financing share. Of this, the majority of funds are for the project management unit operating cost, including counterpart staff salaries and costs for the project advisory committee. The project management and business support services costs have been assumed to be apportioned equally across the three commodities.

H. Estimation of Benefits

23. The project's economic benefits are the aggregate returns generated by investments the project supports. The returns generated from these investments are then estimated under the average investment profile to estimate an aggregate return for all project-supported investments. As is common with agribusiness investments, there are relatively long lead times (up to several years) for the investments to achieve profitability.

24. A demand analysis was undertaken as part of the value chain analyses, which underpins the economic and financial analysis. For Tahitian limes, New Zealand imports about 240 tons of limes per year as of 2013, mostly from the United States (US), which is as the largest supplier in the region. The Australian market imports about 1,500 tons per year as of 2013. Volumes have increased by about 40% from 2008 to 2013, and wholesalers are seeking additional supplies. Prices paid are quite high: around ST18.70/kilogram (kg) on average and up to ST\$27.24/kg during the summer months. The project assumes a price of ST9.00/kg, which is about half current prices. Samoa is able to produce Tahitian limes year-round, providing a unique opportunity to supply the substantial off-season market.

25. VCO is currently exported for around ST11.50 per liter and there is potential to generate much more benefit from this product provided that the quality meets market requirements as certified organic VCO. The major customer is the international cosmetics and toiletries company The Body Shop, which is keen to increase supplies of VCO from Samoa. The annual market demand as of 2013 is over 10,000 tons and growing, suggesting that the additional production of 320 tons induced by the project will be easily absorbed by the market.

26. For taro, the large population of people of Samoan origin in Auckland has a preference for Samoan taro over taro from other sources, suggesting that if exports are gradually expanded

¹⁴ This includes all experts recruited to support the project management unit for project implementation plus the agribusiness innovation scheme.

then the market will absorb supplies. The New Zealand and Australian market currently imports around 15,000 tons but could absorb more if available. The US market imports around 50,000 tons, mostly frozen. Current wholesale prices in New Zealand are ST4.30/kg for Samoan taro and 4.10ST/kg for Fijian taro, which dominates the market. The project estimates prices of ST3.08 for fresh Samoan taro and ST2.60 for frozen, which is conservative given that the market is growing and the project will only be putting an additional 1,100 tons into a market estimated at over 20,000 tons by then.

27. Table 2 shows the current market size and prices, the incremental production induced by the project, and the expected prices. In all cases the additional production can be easily absorbed as it represents only a small fraction of the total production and there is growing demand for these commodities. The prices received by the companies supported through the project are conservatively estimated at lower than or (in the case of VCO) similar to current prices. Free on board prices have been used throughout, with New Zealand dollars converted to Samoan tala at an average 2013 exchange rate of 2.27 and US dollars converted at 1.93.

Table 2: Market Size, Production Volumes, and Prices

Commodity	Market Size (tons)	Current Price (ST/kilogram)	Project Production ^a	Project Price (ST/kilogram)
Limes	1,740	18.00	190	9.00
Taro	15,000	3.67	1,100 ^b , 1700 ^c	3.08 ^b , 2.61 ^c
Virgin coconut oil	10,000	11.50 ^b , 8.00 ^c	320	11.50 ^b , 8.00 ^c

^a Incremental to what would have occurred in the absence of the project.

^b High grade or fresh.

^c Second grade or frozen.

Source: Asian Development Bank.

28. All of the benefits are incremental to what would have otherwise occurred in the absence of the project. Some production for export is already taking place for the three commodities represented here, but in the absence of this intervention and the additional investment it induces, production would not increase significantly from current levels. For example, the production of VCO is currently at maximum capacity (3 tons per week) using the current technology. The major impediment to the development of this industry is technology, which this project will help introduce through new investment and capacity building.

29. The production of Tahitian limes has reached 7 tons in 2013 of a market capacity (in New Zealand only) of approximately 245 tons. The major issue preventing expansion is that taro processing uses the same facility, which is the only quarantine-certified processing facility. The proposed project is the major economic intervention that the Samoan government is depending on to address these technology and capacity constraints.

30. Technology and capacity constraints are also holding up the expansion of taro exports from the 2013 production levels of 84 tons per month. Full capacity of the current processing facility, which involves mainly cleaning and sorting by hand, is close to being reached and there is also competition from other commodities. There is an absence of processing and packaging infrastructure that can handle significant volumes and can potentially be certified (e.g., hazard analysis and critical control points or International Organization for Standardization certification) according to importer requirements and Codex standards.

I. Economic Internal Rate of Return

31. Applying the above estimates and assumptions as summarized in Table 2, Table 3 shows the project's economic performance. From this the economic internal rate of return (EIRR) would be about 21%. The EIRR comfortably exceeds the default social discount rate of 12% annually. Table 3 also presents a further breakdown of the EIRRs by commodity. In order to estimate EIRRs for the three different commodities, the net benefit streams have been disaggregated by assuming that one-third of the total investment goes to each of the three commodities and that one-third of the project costs are attributable to each. According to these assumptions, the EIRRs are 23% for taro, 22% for limes, and 16% for VCO.

Table 3: Economic Internal Rate of Return

Scenario	Project	Taro	Limes	Virgin Coconut Oil
Baseline assumptions	20.99	22.92	22.44	16.14
Costs up 10%	14.22	17.47	15.97	6.04
Benefits down 10%	14.61	17.90	16.13	6.37
Benefits lagged 1 year	11.60	14.13	9.84	6.13
All of the above	1.01	6.26	(0.85)	(11.30)

() = negative.

Source: Asian Development Bank.

Table 4: Switching Values

Scenario	Project	Taro	Limes	Virgin Coconut Oil
Costs up	14%	21%	16%	4%
Benefits down	14%	23%	16%	4%

Source: Asian Development Bank.

32. The sensitivity analysis in Table 3 shows that taro and lime, as well as the overall project, are relatively robust to changes in costs and benefits. In general, the EIRRs are more sensitive to delays in benefits rather than costs and benefits being greater or lesser than expected, with the overall project return falling just below 12% if benefits are delayed a year. The likelihood of the costs and benefits being 10% different to expected is relatively low given that very conservative assumptions were made with respect to estimated prices and quantities. Similarly, the likelihood of benefits being delayed for a year or more is relatively low given the commercial pressures to bring the produce to market as soon as practicable. VCO is relatively less robust than the other two commodities, with the EIRR falling below 12% for all scenarios except baseline. In addition, the switching analysis (Table 4) shows that a 4% difference in costs or benefits is sufficient to bring the EIRR down below 12% for VCO (footnote 12). During implementation, there will have to be careful assessment of VCO proposals to ensure that only the highest value VCO-related investments receive funding if any VCO investments are made.

33. The project has been carefully designed to maximize sustainability of the benefits. The funding instruments and technical support services are expected to have a positive impact on the banks' attitudes to agribusiness lending, despite the relatively tight liquidity in the banking sector. The banks' current cautious approach to agribusiness loans stems from perceptions of the relatively high risks associated with such business ventures and is compounded by apparent limited and inexperienced management resources within companies. The project will directly address these issues in a practical manner and will positively influence the banks' willingness in the medium term to support agribusiness projects. Once the loan has been repaid and the cash collateral has not been used (no default), the cash collateral could be recycled for further lending. Together with the commitment of the government to recycle the grant proceeds beyond project completion, sustainability of the grant benefits will be maximized.