

ECONOMIC AND FINANCIAL ANALYSIS

A. Project context

1. **Country context.** Vanuatu is an island economy that depends heavily on tourism. The share of services, which comprise most tourism-related activities (e.g., hotels and restaurants, transport, wholesale and retail trade, and personal or recreational services), accounted for 65% of economic output in 2015–2020.¹ Visitor arrivals averaged 106,100 a year in 2015–2019, more than 50% coming from Australia, with much smaller shares from various other countries, such as the People’s Republic of China (3%) and Japan (1%).²

2. Recognizing the limitations of its health system in the event of a local coronavirus disease (COVID-19) outbreak, the Government of Vanuatu declared a state of emergency in March 2020. The accompanying border closure shut down tourism, and the country has not recorded any visitor arrivals since then. Visitors to Vanuatu dropped by 82% (footnote 2) over the whole of 2020 compared with 2019. Moreover, Tropical Cyclone Harold struck in April 2020, causing widespread damage to the agriculture sector and particularly to Luganville, the second-largest city. As a result, Vanuatu’s economy is estimated to have contracted by about 8.5% in 2020. A contraction of 3.0% is estimated in 2021 as trade and travel restrictions remained in place.³ Vanuatu had only 5 COVID-19 cases and no community transmission as of 5 November 2021.⁴

3. **Demand analysis.** The economic impact of the COVID-19 pandemic is expected to cost thousands of jobs—many in tourism, including in the informal sector, as well as in seasonal work in Australia and New Zealand—pushing more people into poverty. Social safety nets in Vanuatu are mostly contributory schemes (e.g., pension funds) that benefit mainly the formally employed.⁵ Social protection for workers in the informal sector, in which women are primarily engaged, come in the form of government funding of some—not all—education and health services, and through extended family networks of resource sharing and assistance.⁶ Informal workers, low-income households, and persons with disability remain highly vulnerable to hardship. Under increasing constraints such as those arising from the twin shocks of COVID-19 and Cyclone Harold, these people would lack the means to procure nutritious food and ensure their well-being. Moreover, social disruptions—also exacerbated by these twin shocks—disproportionately affect women and girls who must face additional household responsibilities, reduced access to hygiene facilities and reproductive health services, isolation from peer support, and increased risk of gender-based violence (GBV), among other threats. These impacts are particularly pronounced for women and girls from marginalized and low-income households and in countries such as Vanuatu, where systemic gender inequality remains an issue (footnote 5).

4. **Rationale for public involvement.** Support for informal workers is not provided at all by the market, justifying public provision. The proposed project will also train urban households, particularly vulnerable ones, in horticulture and food processing, which are common public policy interventions. The project is aligned with key government and Asian Development Bank (ADB) strategies such as:

¹ Asian Development Bank (ADB). Asian Development Outlook database (accessed May 2021).

² Vanuatu National Statistics Office. [Tourism Statistics](#).

³ ADB. 2021. *Pacific Economic Monitor -December 2021*. Manila.

⁴ World Health Organization. [WPRO COVID-19 Dashboard \(arcgis.com\)](#) (accessed 6 November 2021).

⁵ ADB. 2020. *Concept Paper: Proposed Grant and Administration of Grant for the COVID-19 Response for Affected Poor and Vulnerable Groups in the Pacific*. Manila.

⁶ ADB. 2012. *Republic of Vanuatu: Updating and Improving the Social Protection Index*. Consultant’s report. Manila (TA 7601-REG).

- (i) Vanuatu's strategies to recover from the impacts of COVID-19 and Cyclone Harold, which seek to support food self-sufficiency, help people get back to work, and involve them in income-generating activities; promote food production and the use of innovative agricultural technology; and improve the productivity, skills, and income of women, including those with disabilities;⁷ and
- (ii) ADB's strategy to manage risks in the Pacific (e.g., through better health and social protection),⁸ as well as the operational priorities of reducing remaining poverty and inequalities, and accelerating progress in gender equality under its Strategy 2030.⁹

B. Economic analysis

5. The economic analysis assesses the viability of the backyard gardening activity under output 1 in line with ADB guidelines.¹⁰ The significant constraints in quantifying project benefits—many of which are social in nature—preclude the cost–benefit analyses of the other proposed activities (i.e., GBV prevention).

6. **Alternative analysis.** A household could establish a backyard garden on its own, but the cost of equipment and supplies for the type to be provided under the proposed project is prohibitive, especially for low-income households. Moreover, most (if not all) women from low-income urban households in Vanuatu would lack the tools and construction skills to do this. They must either seek help from an extended family member with the needed skills and equipment, or else hire labor, which would entail additional costs.

7. **Cost–benefit analysis.** The cost–benefit analysis uses the following key assumptions and estimates, expressed where applicable in latest 2021 prices:

- (i) Economic costs were derived from financial costs using the domestic price numeraire, with a shadow exchange rate factor of 1.09 and a shadow wage rate factor of 1.00 for skilled labor.¹¹ Total investment costs are estimated at \$1.7 million in economic terms, excluding taxes, duties, and price contingencies.
- (ii) The project will fund recurrent implementation-related costs of \$14,547 a year from 2022–2025. Each beneficiary household is also expected to spend \$101 a year to maintain their respective gardens; the first batch of 188 households will incur this cost in 2023 (1 year after their gardens are in place) and all 250 households will incur this in 2024–2031. In 2032, the “useful life” of the first 188 gardens will have ended, and only 62 households will incur this recurrent maintenance cost.
- (iii) This analysis compares with-project and without-project scenarios from 2022, when the backyard gardening activity is scheduled to commence, to 2032, after all the gardens have been in place for 10 years (assumed to be a reasonable “useful life” for the gardens, which would be maintained by the entire household).
- (iv) In 2022, 188 beneficiary households will have backyard gardens in place and realize 65% of the full estimated benefits. In 2023, all 250 beneficiary households will have

⁷ Government of Vanuatu. *Vanuatu Recovery Strategy 2020–2023*. Port Vila; Government of Vanuatu, Department of Agriculture and Rural Development. 2020. *National Agricultural Development Plan 2021–2023*. Port Vila; and the Government of Vanuatu, Ministry of Justice and Community Services. 2015. *National Gender Equality Policy 2015–2019*. Port Vila. The succeeding phase of the gender policy is not yet available as of this writing.

⁸ ADB. 2016. *Pacific Approach 2016–2020*. Manila.

⁹ ADB. 2018. *Strategy 2030: Achieving a Prosperous, Inclusive, Resilient, and Sustainable Asia and the Pacific*. Manila.

¹⁰ ADB. 2017. *Guidelines for the Economic Analysis of Projects*. Manila.

¹¹ The shadow wage rate factor for unskilled labor was not estimated because no significant employment of unskilled labor is expected under the proposed activity.

backyard gardens and realize 85% of full benefits. All benefits will be realized from 2024–2031. In 2032, the “useful life” of the first 188 gardens will have ended, and only 62 households will realize benefits from their backyard gardens.

- (v) With the project, beneficiary households are expected to avoid one round trip to market a week (out of the current average of three times a week) from needing to buy less food. The transport cost is estimated at \$2.80 per round trip.
- (vi) The analysis does not estimate backyard garden food production. Since beneficiary households will be identified only after project approval, project data from which such estimates could be made is not yet available, and proxy data was not available from existing sources. Instead, the analysis relies on estimates of the potential decrease in food costs from substituting bought food with (potential) backyard production. As such, it is assumed that, subject to further verification, the gardens will produce the quantity of food needed to justify the reductions in food costs assumed in the cost–benefit analysis.
- (vii) Beneficiary households are expected to save 60% of the food budget they would otherwise need for the recommended amount of fruit and vegetables for daily consumption. To get the required nutritional content from fruit and vegetables, people in urban areas would have to allocate 40% of their overall food budget to buying fresh produce.¹² Based on data from the 2010 Household Income and Expenditure Survey, 40% of the food budget amounts to \$1,795 a year for a low-income urban household (from the 1st and 2nd quintiles) in 2021 prices. The 60% expected savings with the project is equivalent to 24% of total food spending.
- (viii) Health benefits from improved access to fresh produce is quantified through savings in disability-adjusted life years (DALYs), i.e., years lost because of ill health, disability, or premature death. In Vanuatu, the rate of DALYs from nutrition-related ailments per 100,000 individuals is estimated at 10,895.¹³ This is held constant over the evaluation period and applied to the projected populations of Port Vila and Luganville to compute the applicable DALY rate for the project area over the project evaluation period. The annual economic value of a DALY is forecast at \$2,992 in 2022, based on the World Health Organization approach that derives it from the country’s per capita gross national income. Savings in DALYs are estimated as the proportion of the calculated economic value related to the reduction in risk under the project, and further tempered by the assumptions described in para. 7(iv). Detailed projections on population, and DALYs, and their economic value are presented in the supplementary appendix.

8. Based on these assumptions and using the 6.0% discount rate for social sector and poverty-targeting projects (footnote 10), the proposed backyard gardening activity is found to be economically viable with an economic internal rate of return of 8.5% and economic net present value of \$134,307. Table 2 (at the end of this document) presents the results of the cost–benefit analysis.

9. **Sensitivity analysis.** Viability was tested against adverse scenarios affecting key cost and benefit variables. Results show that the activity is sensitive to increases in investment costs and delayed or decreased benefits, especially from food cost savings (Table 1). This is of particular concern given the inability to estimate backyard garden production. Careful monitoring

¹² ADB. 2021. *Report and Recommendation of the President to the Board of Directors: Proposed Grant and Administration of Grants to the Republic of Vanuatu: COVID-19 Response for Affected Poor and Vulnerable Groups*. Manila.

¹³ Covers nutritional deficiencies, stroke, other cardiovascular diseases, and diabetes mellitus.

and impact evaluation partway through implementation will help measure production and verify effects on beneficiary households' food expenditure.

Table 1: Results of Sensitivity Analysis

Scenario	EIRR (%)	ENPV (\$'000)	Switching value (%)
Base case	8.5	134.3	
10% increase in investment costs	5.6	(20.9)	8.7
10% increase in recurrent cost to households	8.2	118.4	84.4
1-year delay in project benefits	5.8	(16.1)	
20% less avoided trips to market	7.6	84.9	(54.3)
20% less food cost savings	1.0	(264.8)	(6.3)
20% less reduced health risk from a healthier diet	6.7	39.5	(28.3)

() = negative, EIRR = economic internal rate of return, ENPV = economic net present value.

Source: Asian Development Bank estimates.

10. **Distribution analysis.** A breakdown of project beneficiaries by income level or poverty incidence is not available. However, beneficiaries of the activities under output 1 will be selected via an in-depth baseline survey and an application process to identify women in Port Vila and Luganville who (i) have lost income because of COVID-19 and/or Cyclone Harold, (ii) work in the informal sector and struggle to generate a decent income, (iii) are caring for a person with disability, (iv) have survived GBV, or (v) are the head of a poor household. Methods to identify the participants in output 2 will be proposed by the nongovernment organizations (NGOs) interested in implementing the output. The successful NGO is expected to have existing networks with adolescent girls and boys through school or community programs in Port Vila and Luganville. It may propose to work through these networks.

C. Financial sustainability analysis

11. **Output 1.1: Food security and nutrition.** The backyard gardening component will pilot innovative urban food gardening techniques. Experiences from implementation will help the Department of Agriculture and Rural Development (DARD) to design future measures in support of their mandate to improve food security in Vanuatu.

12. **Output 1.2: Livelihood and income generation support.** The Department of Industry (DOI), an agency under the Ministry of Trade, Tourism, Commerce and Ni-Vanuatu Business, will implement the proposed training in food processing and micro or small business development but will not realize any revenue from these activities. This analysis examines the prospects for the financial sustainability of the training activities after project implementation ends in 2025.¹⁴

13. Table 3 (at the end of this document) presents the estimated recurrent costs for the training activities. DOI is expected to begin funding the food processing workshops in 2025, and the business development workshops in 2024. DOI is also expected to incur the following costs starting in 2026 (all cost estimates in May 2021 prices):

- (i) Vt1.0 million every 4 years to periodically replace three sets of food processing equipment (comprising appliances and utensils) used in the workshops;
- (ii) Vt1.7 million every year to hold one Vanuatu Made event showcasing training beneficiaries' products, either in Port Vila or Luganville; and

¹⁴ ADB. 2009. *Financial Due Diligence: A Methodology Note*. Manila.

- (iii) Vt400,000 every year for print and broadcast publicity to share knowledge of value-added food production and micro or small business management with the broader community, and to cover the costs of business development training manuals.

14. The Government of Vanuatu appropriated an average of Vt665.3 million for the Ministry of Trade, Tourism, Commerce and Ni-Vanuatu Business in 2017–2021 (Table 4, at the end of this document). Moving forward, budget allocations are expected to be much higher than this historical average.¹⁵ DOI has indicated commitment to continue the training and awareness-building activities after project implementation, since food processing and value-added product development are key components of its business plan. Future training offered by DOI will use the food processing and packaging equipment procured through the project. The project will also support DOI staff in improving their training modules by incorporating lessons from the design and delivery of project-funded food processing training, and from best practices in micro or small business coaching and development.

15. **Output 2: Multidisciplinary responses to gender-based violence.** Upon approval of the proposed project, the Department of Women’s Affairs will engage an NGO to implement the activities under this output. The sustainability of planned activities will be a key part of the proposals to be solicited from candidate NGOs.

16. **Fiscal sustainability assessment of the Government of Vanuatu.** Before the pandemic, the government demonstrated generally sound macroeconomic management; it reversed a fiscal deficit equivalent to 7.3% of gross domestic product (GDP) in 2015, the result of reconstruction and rehabilitation spending in the wake of Cyclone Pam, to a surplus equivalent to 7.5% of GDP in 2018.¹⁶ After subsequent years of realizing overall budget surpluses, the government anticipates deficits in 2021–2022 as revenues have fallen and expenditures risen because of the socioeconomic impacts of the COVID-19 pandemic (footnote 15).

17. These deficits will be financed largely by domestic resources, including drawdown of cash reserves accumulated from the recent fiscal surpluses, and grant support from development partners. Public debt is thus seen to remain sustainable, even with any additional borrowing that may be necessitated by the COVID-19 response.¹⁷

¹⁵ Government of the Republic of Vanuatu. 2020. *Budget 2021, Volume 1*. Port Vila.

¹⁶ ADB. 2020. *Report and Recommendation of the President to the Board of Directors: Proposed Countercyclical Support Facility Grant to the Republic of Vanuatu: COVID-19 Fiscal Response*. Manila.

¹⁷ ADB. 2020. *Report and Recommendation of the President to the Board of Directors: Proposed Countercyclical Support Facility Grant to the Republic of Vanuatu: COVID-19 Fiscal Response*. Debt Sustainability Analysis (accessible from the list of linked documents in Appendix 2). Manila; and ADB. 2020. *Report and Recommendation of the President to the Board of Directors: Proposed Countercyclical Support Facility Grant to the Republic of Vanuatu: COVID-19 Fiscal Response*. International Monetary Fund Assessment Letter (accessible from the list of linked documents in Appendix 2). Manila.

Table 2: Results of Economic Cost-Benefit Analysis
(\$'000)

Year	Costs					Benefits				Net Benefits
	Project costs			Backyard garden maintenance	Total costs	Avoided transport costs	Food cost savings	Avoided DALYs from healthier diet	Total benefits	
Investment	Recurrent	Subtotal								
2022	878.2	14.5	892.7	0.0	892.7	17.5	78.7	34.2	130.4	(762.3)
2023	337.2	14.5	351.7	18.9	370.6	30.6	137.3	59.3	227.2	(143.4)
2024	283.3	14.5	297.9	25.2	323.0	36.0	161.5	69.6	267.1	(56.0)
2025	171.0	14.5	185.6	25.2	210.7	36.0	161.5	69.3	266.8	56.1
2026	0.0	0.0	0.0	25.2	25.2	36.0	161.5	69.1	266.6	241.4
2027	0.0	0.0	0.0	25.2	25.2	36.0	161.5	68.8	266.3	241.2
2028	0.0	0.0	0.0	25.2	25.2	36.0	161.5	68.6	266.1	240.9
2029	0.0	0.0	0.0	25.2	25.2	36.0	161.5	68.4	265.9	240.7
2030	0.0	0.0	0.0	25.2	25.2	36.0	161.5	68.1	265.6	240.5
2031	0.0	0.0	0.0	25.2	25.2	36.0	161.5	67.9	265.4	240.2
2032	0.0	0.0	0.0	6.2	6.2	8.9	66.8	16.8	92.5	86.2
									EIRR	8.5%
									EIRR @	
									6%	134.3

() = negative, % = percent, DALY = disability-adjusted life year, EIRR = economic internal rate of return, ENPV = economic net present value.

Note: Project recurrent costs include audit services and miscellaneous administrative costs.

Source: Asian Development Bank estimates.

Table 3: Summary of Recurrent Training Costs
(Vt per workshop)

	Unit cost	Food processing (basic)	Food processing (follow-up)	Business development
Frequency/duration	n/a	6 workshops/year 5 days/workshop	3 workshops every 3 years 3 days/workshop	8 workshops/year 3 days/workshop
Estimated attendance/ dependents	n/a	25 participants 5 trainers 40 children	25 participants 5 trainers 40 children	25 participants 5 trainers 40 children
Ingredients	Vt15,000 per day	75,000	45,000	n/a
<i>Participant costs</i>		<i>562,500</i>	<i>337,500</i>	<i>337,500</i>
Transportation	Vt600/day (round trip)	75,000	45,000	45,000
Honorarium	Vt1,500/person/day	187,500	112,500	112,500
Childcare	Vt1,500/child/day	300,000	180,000	180,000
<i>Logistics costs</i>		<i>325,000</i>	<i>215,000</i>	<i>215,000</i>
Food	Vt1,500/person/day	225,000	135,000	135,000
Venue rental	Vt10,000/day	50,000	30,000	30,000
Training materials (printing)	Vt30,000	30,000	30,000	30,000
Stationery	Vt20,000	20,000	20,000	20,000
<i>Others (DOI staff costs)</i>		<i>270,000</i>		
Airfare to Luganville	Vt30,000/round trip	60,000	n/a	n/a
Per diem	Vt20,000/day	200,000	n/a	n/a
Communications	Vt1,000/day	10,000	n/a	n/a
Total costs per year		6,405,000	1,657,500	4,420,000

n/a = not applicable, DOI = Department of Industry, Vt = vatu.

Notes:

1. Of the basic food processing workshops, 4 will be held annually in Port Vila and 2 in Luganville.
2. All follow-up workshops will be held in Port Vila.
3. Of the business development workshops, 4 each will be held annually in Port Vila and Luganville.

Source: Asian Development Bank estimates.

Table 4: Food Processing and Business Development Costs
(Vt million and percentage of budget)

Year	Recurrent Costs						Ministry of Trade, Tourism, Commerce and Ni-Vanuatu Business		
	Equipment and supplies	Food processing workshops	Business development workshops	"Vanuatu Made" events	Community awareness	Total	Budget	% of budget	
Historical	2017						337.6		
	2018						445.8		
	2019						479.2		
	2020						732.1		
	2021						1,331.9		
Project implementation	2022						1,073.5		
	2023						958.5		
	2024			4.42			4.42	831.6	0.5
	2025	0.45	6.41	4.42			11.28	846.7	1.3
First 5 years of self-funded operations	2026	1.50	6.41	4.42	1.70	0.40	14.43	839.2	1.7
	2027	0.59	8.06	4.42	1.70	0.40	15.17	842.9	1.8
	2028	0.45	6.41	4.42	1.70	0.40	13.38	841.0	1.6
	2029	1.50	6.41	4.42	1.70	0.40	14.43	842.0	1.7
	2030	0.59	8.06	4.42	1.70	0.40	15.17	841.5	1.8

% = percent.

Note: Additional decimal places added to show detail.

Sources: Government of the Republic of Vanuatu. Budget Appropriations. Port Vila (4 years: 2018–2021); and Asian Development Bank estimates.