SBF Project Completion Note

Philippines: Second Health System Enhancement to Address and Limit COVID-19 under the Asia Pacific Vaccine Access Facility Project (HEAL 2, or the "first Project") (including HEAL 2 – Additional Financing, the "second Project") (together, the **"Projects"**)

1. Projects Information

Project IDs	P000490 and P000555[1]
Responsible department:	PSC1
Borrower:	Republic of the Philippines
Implementing Agency:	Department of Health, Philippines (DOH)
Financing type:	Sovereign-Backed Financing
Instrument type:	Loan
Member:	Philippines
Sector:	CRF-Public Health
E&S category:	C

Overall rating:	Successful
Effectiveness Assessment:	Effective
Relevance Assessment:	Relevant
Efficiency Assessment:	Highly Efficient
Sustainability Assessment:	Likely sustainable

2. Projects Development Objectives

To support the Government of the Philippines for rapid procurement of eligible COVID-19 vaccines.

3. Key Dates

Approval:	03/25/21 & 12/16/21	Signing:	03/26/21 & 12/20/21
Effective:	05/10/21 & 01/27/22	Restructured (if any):	08/01/23 (first Project partial cancellation) & 12/12/23 (second Project cancellation)
Orig. Closing:	09/30/24 & 09/30/24	More Restructured dates (if any)	
Rev. Closing:	01/26/24 & 12/12/23		

4. Financial Summary (US Dollar million)

Currency:	US Dollar		
Committed:	300.00 & 250.00	Cancelled:	4.37 & 250.00
Disbursed:	295.63 & NA	Undisbursed:	0.00 & NA

5. Overall rating

[1] The Additional Financing under P000555 was cancelled at the request of the Borrower before any disbursement was made due to (i) vaccine overstock; (ii) lapse of Republic Act No. 11525 also known as the COVID-19 Vaccination Program Act of 2021; (iii) continuation of bivalent vaccine supply through the COVID-19 Vaccines Global Access (COVAX) Program 2024–2025.

Overall rating:	Successful

Overall, the project successfully met the objective. While the Additional Financing under P000555 was cancelled, P000490 was considered effective, relevant, highly efficient, and likely sustainable. With 85 million doses delivered, 64 million of which are documented as administered, equivalent to 25.9 million individuals vaccinated, the first Project effectively contributed to delivering on its objective. The first Project was highly aligned with national policies, including COVID-19-specific guidelines. It contributed to the digitalization agenda by launching the Vaccine Information Management System (VIMS) while delivering COVID-19 vaccines. VIMS supported tracking COVID-19 vaccination administration and logistics. The first Project investment is considered efficient because the benefits exceeded its economic costs. The averted productivity losses and direct medical costs resulted in an economic internal rate of return (EIRR) of 99.0%, a net present value of Philippine Peso (PHP) 41.3 billion, and a benefit–cost ratio of 1:1. The first Project is likely to have sustainable impacts as it contributed to economic recovery by subsiding the pandemic, the E&S policy implementation including establishment of GRM resulted in improving the capacity at DOH having long term impact.

Cancellation of Additional Financing under P000555

The Additional Financing under P000555 was cancelled at the request of the Borrower before any disbursement was made due to (i) vaccine overstock; (ii) lapse of Republic Act No. 11525 also known as the COVID-19 Vaccination Program Act of 2021; (iii) continuation of bivalent vaccine supply through the COVID-19 Vaccines Global Access (COVAX) Program 2024–2025; (iv) a decline in demand due to prevalence of less serious COVID-19 Omicron variant. Given the evolving pandemic situation and global uncertainty, the project approval was considered effective; a more adaptive design, with a possible repurposing option, could have avoided the cancellation.

The PCN submission has been delayed from the scheduled submission in March 2025 for reasons including the start of PCN preparation after the publication of lead cofinancier ADB's project completion report in December 2024, changes in project teams, and resource constraints.

Section I. Effectiveness

Effectiveness Assessment:	Effective

Overall assessment of effectiveness: The first Project supplied 85 million vaccine doses to the country, staying within the ceiling of 110 million, with records confirming that 64 million doses were administered to 25.9 million people, or about one-third of all fully vaccinated individuals in the Philippines. The actual number of Project-financed doses used was probably higher than 64 million, as 17.4 million doses could not be verified as administered because of data issues such as incorrect tagging and reporting. The full 110 million doses were not purchased under the first Project because, by early 2022 the DOH already had excess vaccine stocks. This surplus was an unforeseen factor beyond the first Project's control, driven by procurement uncertainty, unexpected vaccine donations to the Philippines, and a sharp decline in demand once the COVID-19 Omicron variant, with generally milder symptoms, became widespread. The first Project faced no E&S problems and helped improve medical waste management in the Philippines by developing a waste management monitoring framework, which included indicators for environmental complaints, waste management plans, vaccine wastage, and compliance with regulations and permits. The gender action plan (GAP) was effectively carried out, meeting four of its five indicators. The indicator related to online consultation and/or survey and associated gender analysis undertaken could not be fully achieved because while DOH carried out the vaccine sectoral survey for the DOH Central Office. However, the survey data could not be disaggregated and were not utilized for gender-based analysis.

While such the data related issues were encountered, leveraging diverse data collection approaches, such as focus group discussions, key informant interviews, and implementation research, would have provided a comprehensive understanding of emerging implementation challenges.

Overall, the GAP helped enhance the health and well-being of women and girls through policies, capacity-building efforts, and communication activities that prioritized women, girls, and other vulnerable groups.

Project Objective: To support the Government of the Philippines for the rapid procurement of eligible COVID-19 vaccines.

Results Monitoring Framework (RMF)[2]

Project Objective Indicators

Monitoring end year：2024

Indicator Name	Unit of Measure	Baseline (2022)	Actual	End Target
By 2024, up to 50 million Filipinos, which constitutes approximately 43.8% of the total population, vaccinated against COVID-19 with the data disaggregated by gender, age, and priority group.	Number	0	78.44 million (Female - 51%, Male - 49%)	50 million

Comments: Of the 85.6 million vaccine doses procured under the Project, 64 million were known to be administered, with conservative estimates of DOH indicating that 25.9 million individuals were fully vaccinated. By the end of 2023, using all resources (including those provided by the first Project), the DOH had fully vaccinated 78.44 million people. By priority groups (referred to by DOH as vaccination group A), DOH had fully vaccinated 113% of health care workers (group A1), 82% of senior citizens (group A2), 101% of with comorbidities (group A3), 74% of with comorbidities (group A4) and 77% of the indigent (poor) population (group A5) by March 2023.[3] Alongside procuring the vaccine, it launched a vaccine information management system and supported the development and dissemination of vaccination hesitancy protocols across the country. The first Project was central to attaining universal COVID-19 vaccination and halting the pandemic.

Intermediate Result Indicators

Monitoring end year：2024

Indicator Name	Unit of Measure	Baseline (2021)	Actual (Current)	End Target
By 2024, up to 110 million doses of COVID-19 vaccines procured and delivered to the country.	Number	0	85.6 million	up to 110 million

[2] The RMF is only monitored and reported for the first Project. Since there was no disbursement under the second Project, no measurement of its results was carried out.

[3] Government of the Philippines, DOH. 2024. Project Completion Report: Second Health System Enhancement to Address and Limit COVID-19 under the Asia Pacific Vaccine Access Facility. Unpublished.

Comments: As of March 2023, the first Project procured and delivered 77.80% of the target doses of COVID-19 vaccines to the Philippines, comprising 40.0 million Pfizer doses and 45.6 million Sinovac doses. Further Project-financed vaccine procurement was deemed unnecessary because the Philippines had a COVID-19 vaccine overstock by early 2022, leading to the May 2022 DOH executive committee decision to halt further procurement using the remaining first Project loan proceeds and the full second Project loan amount.

Section II. Relevance

Relevance Assessment: Relevant

By supplying one-third of all COVID-19 vaccine doses administered in the Philippines, the first Project made a pivotal contribution to controlling a severe public health crisis. It was consistent with the National Objectives for Health 2017–2022, the National COVID-19 Vaccination Roadmap, the National Vaccine Deployment Plan for COVID-19 Vaccines, the coverage targets of the Inter-Agency Task Force on Emerging Infectious Diseases, and presidential directives aimed at speeding the country's recovery through priority vaccination.

The Project's design was sound, and the chosen loan modality was suitable, allowing for rapid vaccine procurement, better vaccine tracking, and vaccination of vulnerable groups. Its innovative elements included support for a digital vaccine system, which was used to track the supply and distribution of vaccines to the local government units, and the creation of vaccine hesitancy protocols addressing the proliferation of misinformation, an emerging concern at the time of design that later became a major global vaccination challenge. First Project's approval in March 2021 was well-timed, enabling large-scale vaccine rollout in the early phase of the pandemic. The approval of the second Project in December 2021 also demonstrated readiness and strong coordination between all stakeholders.

Although the first Project's results framework was robust overall, limitations in the RMF and DOH information systems constrained the ability to fully assess its impact. For instance, the RMF did not record actual vaccination coverage or evaluate how effective the government's Vaccine Information Management System (VIMS) was. Data collection efforts under the VIMS focused on producing aggregate data that could be quickly uploaded by regions to program managers. It did not produce individual-level data, including the number of individuals inoculated and the doses finally used. Adding indicators for priority groups, vaccine hesitancy, and vaccine wastage would have offered a more complete understanding of how the Project supported national health objectives. These could be used as lesson learnt for similar projects in the future.

Section III. Efficiency

Efficiency Assessment: Highly Efficient

The first Project's completion-stage economic analysis (Annex 1) concluded that its benefits, measured in disability-adjusted life years (DALYs) saved, were greater than its economic costs.

The results of the base case cost-benefit analysis of the HEAL2 vaccines show averted productivity losses from mortality to cost streams over the time horizon yields an economic internal rate of return (EIRR) of 98.97%, with an ENPV of PHP41.34 billion. This base case far exceeds the economic opportunity cost of capital of 6% in the health sector, and 9% or even 12% for public sector projects in general. The cost-effectiveness of the project is further supported by a BCR of 1.12, signifying that more than one-for-one economic benefits were gained for every peso spent.

Using conservative assumptions aligned with the government's definition of full vaccination, the analysis assumed that 64 million project-financed doses fully vaccinated 25.9 million people. It is estimated that vaccinating this group avoided PHP477.2 billion in direct COVID-19 treatment costs and prevented 117,166 DALYs, yielding an incremental cost-effectiveness ratio of –PHP4.1 million per DALY averted, which indicates that vaccination was clearly more cost-effective than

no vaccination.

In 2021, the first Project financed the procurement and delivery of 85 million vaccine doses for the Philippines, with a total value of $689.0 million. It completed all contract awards and disbursed 98% of loan funds within the first nine months of implementation, demonstrating rapid execution that required close coordination among DOH, ADB, and AIIB and highlighted the first Project's process efficiency.

Sensitivity analysis examined the EIRR under several scenarios: a 10% reduction in benefits; a 10% increase in costs; a simultaneous 10% reduction in benefits and 10% increase in costs; and potential gains if all doses were assumed to be administered rather than the conservative base-case assumption. Additional scenarios incorporated immunity from natural infection and different discount rates, and in all cases, recalculated measures of economic efficiency, including net present value and EIRR, remained robust, underscoring the first Project's overall economic soundness.

On the operational front, to distribute high volumes of vaccines to local governments, DOH used existing government storage facilities for vaccines requiring usual refrigeration temperatures (e.g., Sinovac, which was stored at +2°C to +8°C) and contracted third-party logistics for deep freeze vaccines (including Pfizer's, which was stored at −70°C). DOH contracted private firms to manage waste and implemented environmental safeguards programs, which included developing a waste management plan that enforced waste segregation and designated pollution control officers at facilities. The project had zero environmental complaints in most areas, and the reported complaints were minor. Efficient vaccine management kept wastage rates low, and most health facilities developed waste management plans and practiced proper segregation.

Section IV. Sustainability

Sustainability Assessment:	Likely sustainable

The first Project is likely sustainable because it has reduced COVID-19 cases, hospitalization, and deaths, fostering economic growth, had minimal negative E&S impacts, supported system strengthening, effective gender mainstreaming, and capacity building.

The first Project remained category C for Environmental Safeguards, Involuntary Resettlement, as well as Indigenous Peoples, per ADB's SPS. It did not support civil works or other activities with potentially adverse environmental impacts, nor did it require land acquisition or lead to any resettlement impacts. Its implementation did not directly or indirectly impact Indigenous Peoples' human rights, dignity, or economic livelihoods.

The first Project developed a waste management monitoring framework, which included indicators for environmental complaints, waste management plans, vaccine wastage, and compliance with regulations and permits. No complaints or safety incidents were reported. Medical waste was managed per the DOH Health Care Waste Management Manual and DOH Interim Guidelines on Managing Health Care Waste Generation from COVID-19 Vaccination. Following the DOH approach, it delivered vaccinations to priority group A, including health care workers, senior citizens, people with comorbidities, pregnant women, and poor people.

The first Project facilitated COVID-19 vaccine access to marginalized women and women in especially difficult circumstances through gender-sensitive and socially inclusive vaccine protocols and community engagement activities. Women comprised the majority of people in the priority groups vaccinated under the first Project. The gender action plan was successfully implemented, with four out of five indicators achieved. It contributed to improving the health and well-being of women and girls through issued policies, capacity building, and communication programs that prioritized women, girls, and vulnerable groups.

The Project reinforced vaccination systems—including procurement, cold chain capacity, information systems, and workforce skills—and maintaining these functions going forward requires relatively modest resources. Since its transfer from the Department of Information and Communications Technology to the DOH in 2022, the VIMS has encountered operational difficulties. To overcome these, DOH should consider assigning an adequate budget, recruiting specialized personnel, and investing in the foundations of a robust vaccine information system. The latter includes improving the interoperability between the vaccine administration system (VAS) and the vaccine tracking systems from the local government units, strengthening data governance mechanisms, and expanding the budget and information technologies personnel to sustain the VAS system.

Lessons Learned[4]

Lesson 1.

Category	Project Design
What had AIIB planned would happen?	The Project emphasized vaccinating priority populations and expected robust data collection.
What happened during implementation?	The data collection procedure did not produce individual-level data, including the number of individuals inoculated and the doses finally used. These initial challenges hampered effective tracking of the vaccination campaign and stock management. The RMF indicators did not include monitoring implementation of the vaccination program. The indicator focuses on the efficient delivery of vaccines to the country.
Why was there a difference between what was planned and what happened?	Data collection efforts under the VIMS focused on producing aggregate data that could quickly be uploaded by regions to program managers rather than producing more granular data. Additional RMF indicators could have better gauged the Project's impact on people, for example, by including specific indicators for priority populations in addition to the one for the entire population. Additional targets could have gauged the number of individuals finally inoculated, the percentage of teams trained, the facility usage of the VIMS software, vaccine hesitancy, and vaccination wastage rates.
What can AIIB do differently in the next project?	The information systems at the beginning of the pandemic would not have been able to track some of these dimensions, particularly the distribution and inoculation of vaccines. The need to strengthen these systems is a lesson learned for future pandemics. Transition from the VIMS to the Vaccine Operation Reporting System was designed to remedy these challenges, but revealed large backlogs in encoding demographic profiles and other information from paper forms at subregional and local levels. For future projects, AIIB can engage early to understand data collection requirements and assess against system limitations and required output analysis. RMF design for supply-focused health interventions can also help projects with better results monitoring and achievement. Similarly,

[4] Refers to the lessons learned from the first Project.

	a more adaptive project design and structuring can help all stakeholders, particularly with the rapidly evolving crisis contexts.

Lesson 2.

Category	Financial
What had AIIB planned would happen?	Robust financial management
What happened during implementation?	During the COVID-19 pandemic, normal internal controls and protocols were partially and/or temporarily suspended, and processes were shortened. Audited project financial statements (APFS) were submitted with an average delay of 6 months. The primary reason being for the delay by DOH in providing complete financial statements to the Commission on Audit (COA) and COA personnel shortages. The audit opinion issued adverse opinions on the APFSs for fiscal years 2021 and 2022 due to deficiencies in vaccine inventory management and reporting.
Why was there a difference between what was planned and what happened?	During emergency situations shortened controls, protocols and processes ensured timely delivery of public goods and services.
What can AIIB do differently in the next project?	Shortened procedures should be compensated by stronger oversight arrangements, such as (i) periodic inventory and contract monitoring, (ii) routine inventory management audits of vaccine storage facilities and vaccine distribution sites by DOH's internal audit unit, and (iii) annual performance audit, all of which were required in the financial management action plan. These remained unimplemented at Project closing since the project emphasized vaccinating populations and ensuring more on the safety and well-being of the population. The proposed measures were planned in good faith, but the challenges remained in managing them in the pandemic situation. However, if implemented well, these would have been essential to immediately addressing emerging issues and the timely completion of Project objectives. In the absence of these controls, later efforts to account for vaccines were unsuccessful. For future Project's, this learning can provide input for better design and implementation. Also, a more careful assessment to provide FM capacity support to DOH and engage early with COA.

Lesson 3.

Category	Strategic External Environment
What had AIIB planned would happen?	Implementation challenges due to ongoing pandemic and multiple stakeholder coordination.
What happened during implementation?	Strong government ownership and frequent interaction with donors facilitated rapid implementation (contract awards and disbursements were completed within the first year) despite a highly complex COVID-19 pandemic environment and DOH leadership changes.
Why was there a difference between what	The whole-of-government approach ensured rapid vaccinations through collaboration across departments, as well as with civil society and the private sector.

was planned and what happened?	
What can AIIB do differently in the next project?	For future projects, AIIB should strive to templatize a similar whole-of-government approach for smoother implementation and effective delivery of project objectives. For MDB co-financed projects, division of responsibilities and complementary efforts on workstreams can also improve the effectiveness of the response.

6. Client feedback

The borrower has been appreciative of AIIB and the Project team's professionalism during preparation and implementation, and acknowledged the responsiveness of the team, in close coordination with the lead co-financier. The borrower also expressed its appreciation for AIIB's adaptability in addressing challenges that arose during Program implementation.

Annex 2 provides detailed responses to the feedback questionnaire.

Annex 1: Economic and Financial Analysis

A. Introduction

1. The rapid deployment of vaccines was a principal contributor to the global emergence from the coronavirus disease (COVID-19) pandemic. In the Philippines, despite initial scarcity of vaccines, by mid-2022, over 75.0 million individuals had received at least one dose, of which 70.5 million were fully vaccinated[5]. The Project was a significant contributor to vaccine supplies to the country. Its anticipated impacts were (i) health system performance in addressing public health outbreaks improved, (ii) protection of the public and reduction of COVID-19-related morbidity and mortality fostered, and (iii) economic growth and citizens' confidence restored.

B. Economic Evaluation Methodology

2. In the absence of an economic evaluation at the Project's pre-approval stage, this analysis seeks to determine the ex-post-performance of the Project in economic terms, focusing on quantifiable health gains, i.e., protection of the public and reduction of COVID-19-related morbidity and mortality. The methods largely follow the latest ADB general guidelines for economic analysis of projects and guidelines specific to the health sector[6]. Unless otherwise indicated, results are expressed in 2023 constant Philippine pesos. The time horizon spans the years 2021–2024, in keeping with the years of disbursement, spending, and the assumed time horizon for the effectiveness of the administered vaccines. The actual beneficiary population was derived from Project implementation data supplied upon completion and was assumed to be unchanged throughout the time horizon. The population was then divided into age groups using data on actual recipients to facilitate more precise accounting for age-related morbidity, mortality, and vaccine effectiveness in the economic analysis.

3. **Evaluation model.** Two approaches were used in this evaluation. The first was an incremental cost-effectiveness analysis (CEA) that compared the economic costs and health effects in terms of averted disability-adjusted life years (DALYs) between the Project scenario and a no-vaccine scenario for the beneficiary population. Incremental cost-effectiveness ratios (ICERs) were calculated across a base case and other test discount rates. The second approach involved a cost-benefit analysis (CBA) of the Project, quantifying benefits in terms of averted productivity losses due to premature mortality and averted direct medical costs for severe cases among the vaccine beneficiaries. For the CBA, we calculated the benefit-cost ratio (BCR), economic net present values (ENPVs) at different discount rates, and the economic internal rate of return (EIRR).

4. For both approaches, we used a discrete-time, deterministic modification of a susceptible-exposed-infected-recovered (SEIR) compartment model to define the health states to which economic costs and benefits were then assigned[7]. The model applied here is a simplified version of an SEIR model used to compare the costs and benefits of alternative COVID-19 vaccination strategies in Colombia[8]. In our model, the entire beneficiary population either receives full vaccination or remains unvaccinated. Each group proceeds through the treatment arms according to transition probabilities that determine the likelihood of any individual moving from one state to the next or remaining within the same state for that cycle. The two treatment arms are identical except for the: (i) transition probabilities determining movement through the states, (ii) presence in the base case of assumed long-term residual immunity from vaccination that is carried forward into the next cycle; and (iii) disability weights and economic costs assigned to each state. Finally, the streams of costs and benefits in terms of DALYs averted, productivity losses averted, and direct medical costs averted were used to compare the Project to the no-vaccine scenario. Table 1 summarizes the model specifications.

Table 1: Economic Evaluation Model Assumptions

Component	Specification and assumptions
Model type	Modified SEIR, deterministic
Perspective	Modified societal

[5] Government of the Philippines, Department of Health (DOH). 2022. Monthly vaccination accomplishment, program implementation data. Unpublished.
[6] ADB. 2017. Guidelines for the Economic Analysis of Projects; ADB. 2000. Handbook for the Economic Analysis of Health Sector Projects.
[7] Altman, S. et.al. 2020. The SEIRS model for infectious disease dynamics. Nature Methods. 17. pp. 557–558.
[8] Morales-Zamora, G. et al. 2022. Cost-effectiveness analysis of strategies of COVID-19 vaccination in Colombia: comparison of high-risk prioritization and no prioritization strategies with the absence of a vaccination plan. Value in Health Regional Issues. 31. pp. 101-110.

Population	Recipients of the Project vaccines. Age group (AG) stratification: AG1: 12–17 years old, AG2: 18–59 years old, AG3: 60 up
Intervention	Full vaccination with COVID-19 vaccines, defined as receiving at least two doses of either of the Project approved vaccines: BNT162b2 (Pfizer–BioNTech) or Sinovac (CoronaVac). Vaccines affect transition probabilities through vaccine effectiveness. In the base case, partial immunity is retained after the first year and declines at a constant rate thereafter. There is no re-vaccination within the time horizon.
Comparator	No vaccine received. Populations are subject to transition probabilities appropriate to an unvaccinated cohort. In the base case, there is no immunity after recovery.
Outcomes (Benefits)	CEA: DALYs from confirmed infections requiring home care, severe or critical cases requiring hospitalization, and deaths. CBA: Productivity losses from premature mortality averted; direct medical costs for severe cases averted
Outcomes (Costs)	Direct medical costs of home or hospital care and testing; vaccine and Project costs: procurement, distribution, administration
Time horizon	2021–2024; cycle length = 1 year
Discount rate	6%
Efficiency measures	CEA: ICERs CBA: BCR, ENPV, EIRR

BCR = benefit-cost ratio, CBA = cost-benefit analysis, CEA = cost-effectiveness analysis, DALYs = disability-adjusted life years, ENPV = economic net present value, EIRR = economic internal rate of return, ICER = incremental cost- effectiveness ratio, SEIR = susceptible-exposed-infected-recovered
Source: ADB

5. At the beginning of the first cycle (year 0 = 2021), all are susceptible (S). Within the cycle, S individuals can either remain uninfected but susceptible, become infected (I), or die (D) due to non-COVID-19-related causes. Those who are infected have disease that is either mild to moderate, severe, or critical. We assume that mild to moderate cases are cared for at home, while severe and critical cases are hospitalized. By the end of the cycle, diseased individuals will have either died (D) or recovered (R). Depending on the assumed behavior of the disease, R individuals will either have no immunity and therefore enter the next cycle as S, or will have some degree of immunity going into the next cycle. Death is the absorbent state; that is, D individuals whether dead due to COVID-19 or other causes remain in this state throughout all subsequent cycles. We also assume that individuals can only become infected once per cycle. This is a conservative assumption that underestimates the total burden of disease.

6. **Economic costs: project costs.** Yearly financial costs taken from Project's audited financial statements were first converted to economic costs by inflating financial costs to constant 2023 prices, using the manufactures unit value (MUV) index from 2021–2023 (Table 2)[9]. This index was chosen as the inflator because of the traded nature of the vaccines, the procurement of which was the Project's principal activity. We then excluded all taxes, duties, and financing costs. The remaining adjusted financial costs were then converted using a shadow exchange rate factor (SERF)[10] of 1.6 on foreign costs (Table 3) and a conversion rate of 1.0 on all other costs. This resulted in an economic and financial cost ratio of 99.12% (Table 2).

Table 2: Details of Actual Project Financial Cost by Phasing
(2023 constant PHP billion)

Category	2021	2022	Total
A. Investment costs			
Advance payments to supply contractors	0.60	0.60	1.20
Eligible COVID-19 vaccines: inventories issued	6.21	2.80	9.01
B. Recurrent costs			
Other vaccine-related operating costs:[a] subsidy from	29.59	5.37	34.96

[9] World Bank. Commodity Markets Outlook (accessed April 2024).
[10] Asian Development Bank. Shadow Exchange Rate for Project Economic Analysis: Toward Improving Practice at the Asian Development Bank (accessed April 2024).

Government of the Philippines Tax payment for Pfizer vaccine procurement: subsidy from other funds	1.07	0.00	1.07
Inflation index: MUV index (2010=100)[b]			

MUV = manufactures unit value.

[a] Included injection devices, personal protective equipment, vaccine transportation, storage, waste disposal, surveillance, and taxes and duties.

[b] The MUV is a weighted unit value index of exports of manufactured goods by 15 industrialized countries. Source: Audited project financial statements, 2021–2022.

Table 3: Shadow Exchange Rate Factor

(2023 constant PHP billion)

Category	FY2021	FY2022	Average
Total exports, X (million $)	74,653.00	74,693.00	74,673.00
Total imports, M (million $)	116,883.00	116,885.00	116,884.00
Taxes on international trade and transaction (million $)	13,068.02	11,813.51	12,440.76
Official exchange rate, average of period (PHP:1 USD)	49.25	54.48	51.87
SCF	**0.94**	**0.94**	**0.94**
SERF	**1.07**	**1.06**	**1.06**

FY = fiscal year, SCF = standard conversion factor, SERF = shadow exchange rate factor, Source: ADB Key Indicators for the Philippines, 2021–2022.

Table 4: Details of Project Financial and Economic Cost

(PHP billion)

Category	Financial cost, total	Foreign cost	Local cost	Taxes	Other local cost	Conversion factor	Economic cost
A. Investment costs Advance payments to supply contractors Eligible COVID-19 vaccines: inventories issued	1.20 9.01 34.96	1.20 9.01 0.00	0.00 0.00 34.96	0.00 0.00 0.00	0.00 0.00 34.96	1.06 1.06 1.00	1.28 9.6 34.96
B. Recurrent costs Other vaccine-related non-tax operating costs[a] Taxes	1.07	0.00	1.07	1.07	0.00	0.00	0.00
Total	**46.24**	**10.21**	**36.03**	**1.07**	**34.96**		**45.84**
Economic/financial cost ratio (%)							**99.12**

[a] Including injection devices, personal protective equipment, vaccine transportation, storage, waste disposal, and surveillance.
Source: ADB estimates.

7. **Economic costs: direct medical costs.** For the incremental analysis, it was necessary to assign economic costs to each state in the model, to account for costs to healthcare payers of health outcomes with and without vaccination. Only direct medical costs were counted. All confirmed infections that were neither severe nor critical were assumed to receive home care. For this, we used PHP8,717.00 per case, which was the value of the PhilHealth (Philippine Health Insurance Corporation) home isolation benefit package[11] plus the value of the package for cartridge- based RT-PCR testing.[12] Average PhilHealth claims for COVID-

[11] Government of the Philippines, Philippine Health Insurance Corporation. 2021. *Application of Debit-Credit Payment Method (DCPM) to facilitate the Settlement of Accounts Payable to Healthcare Facility (HCFs) During the State of Public Health Emergency due to the COVID-19 pandemic.*

[12] Government of the Philippines, PhilHealth. 2021. *Benefit Packages for SARS-CoV-2 Using RT-PCR Tests (Plate- based and Cartridge-based)*

19 hospitalizations in 2021 were used for severe[13] and critical[14] cases, yielding direct medical costs of PHP331,471.95 and PHP774,299.39 per case, respectively. These claim-based costs are significantly higher than the corresponding PhilHealth package case rates but were chosen as they are more representative of actual costs incurred. All costs were discounted at a base case discount rate of 6%, in keeping with recommendations in the ADB Guidebook for social development projects, including in the health sector.

8. **Economic benefits: averted disease burden (CEA).** For the CEA, we compared the benefits of vaccines versus the no-vaccine scenario in terms of disease burden reductions, specifically DALYs averted. The first step involved estimating the number of actual Project beneficiaries. Of the 181.60 million doses administered in the Philippines in 2021 from all vaccine sources, Project vaccines accounted for 35.3%, or 64.03 million doses.[15] In the same year, 73.5 million individuals were considered "fully vaccinated."[16]Dividing this number by the total number of doses administered, we surmised that 2.5 doses were used for every fully vaccinated individual, yielding an estimated 25.9 million individuals fully vaccinated from the Project vaccines alone. This number is lower than the attributed number of individuals in the DMF due to the higher number of doses used in the DOH definition (footnote 12) but was chosen to impose more conservative assumptions in the economic analysis.[17] The total number of beneficiaries was then divided into age-specific hypothetical cohorts (AG cohorts) according to proportions from actual vaccine administration data.

[13] Government of the Philippines, PhilHealth. 2021. *Stats and Charts 2021*. PHP3,041,918,084 claims for 9,177 cases of severe COVID-19.
[14] Government of the Philippines, PhilHealth. 2021. *Stats and Charts 2021*.PHP3,224,956,973 claims for 4,165 cases of critical COVID-19.
[15] Government of the Philippines, DOH. 2024. *Project Completion Report: Second Health System Enhancement to Address and Limit COVID-19 under the Asia Pacific Vaccine Access Facility*. Unpublished. This reference was used for all estimates of the beneficiary population estimates described in this section.
[16] Footnote 11, The DOH defined "fully vaccinated" in this report as two primary doses plus two booster doses. According to the DOH PCR, about 64 million, or 35.3%, of the 181.6 million doses from all sources administered were attributed to Project vaccines. This included 32.4 million Sinovac doses and 31.6 million Pfizer doses.
[17] Footnote 11, Based on the national average number of doses per "fully vaccinated" individual according to DOH PCR definitions, to the number of Project doses delivered to the Philippines, and assuming all doses delivered were administered.

9. Each AG cohort was assumed to enter the treatment arms in the susceptible state. Transition probabilities determining the proportion of individuals within the year becoming infected, dying, or recovering were taken from peer-reviewed publications, prioritizing real-world data and local studies or systematic reviews and meta-analyses where available. The age-specific cohorts were cycled through the model states for 4 cycles, representing the years 2021 to 2024. The number of individuals in each state was summed per cycle and converted to per capita DALYs generated using global disability weights for mild, moderate, and severe respiratory infections.[18]

10. **Economic benefits: averted productivity losses and averted medical costs (CBA).** To quantify Project gains in terms of monetary value, we applied a human capital approach to estimate productivity losses averted due to the vaccination program. The method generally follows standard productivity loss estimation practice in health economics,[19] and a recent study of COVID-19 related disease impacts.[20] The productive years of life lost (PYLL) in each age group is taken from the difference between the compulsory retirement age and the group median age of the group. This was multiplied by the adjusted annual wage for the age group, which is the 2022 annualized median monthly wage in the Philippines[21] multiplied by the age group-specific labor force participation rate (LFPR)[22] and the same-year unemployment rate. In order to avoid the effects of misattributing lifetime productivity gains as instantaneous, age group-specific individual permanent productivity losses (IPPLs) limited to the time horizon of the Project were calculated, and then multiplied by the number of premature COVID-19 deaths in each AG cohort. This underestimates true gains because of the truncated time period, and also because it quantifies only losses from premature mortality without accounting for temporary productivity losses due to absenteeism or morbidity.

11. The economic benefits consider the averted medical costs for the most critical cases. Average direct medical costs associated with intensive care confinement were multiplied by the number of critical cases in each year and age group. To make the economic analysis more conservative, we assumed that the benefit amounted to only 30% of this average cost, and we did not include indirect medical costs, which are typically borne by patients out of pocket.

12. **Efficiency measures.** For the CEA, we estimated the ICER, which is the ratio of the difference in per capita economic costs for the with-vaccine versus without-vaccine scenarios to their difference in per capita economic benefits. The ICER is given in PHP per DALY averted. For the CBA, we calculated the Project's realized benefit-cost ratio (BCR), the economic net present value (ENPV), and the economic internal rate of return (EIRR). All calculations in the base case were done at a discount rate of 6%.

13. **Sensitivity analysis.** Additional analysis was done testing the effect of immunity due to natural infection. For this, we assumed that natural infection results in some degree of long-term immunity: at 40 weeks post-infection, these are 78% (95% confidence interval 49.8–93.6) against reinfection, severe disease, and death; and 90.2% (95% confidence interval 69.7–97.5) against critical

[18] Institute for Health Metrics and Evaluation Global Health Data Exchange. 2021. *Global Burden of Disease Study 2021 (GBD 2021) Disability Weights*.

[19] A. Barchuk et al. 2018. Productivity losses due to premature mortality from cancer in Brazil, Russia, India, China, and South Africa (BRICS): A population-based comparison. *Cancer Epidemiol*. 53. pp. 27–34.

[20] F. Castrini et al. 2020. Impact of the Burden of COVID-19 in Italy: Results of Disability-Adjusted Life Years (DALYs) and Productivity Loss. *Int. J. Environ. Res. Public Health*. 17(12).

[21] Government of the Philippines, Philippine Statistics Authority. 2022. *Labor Force Survey*. Defined as the median basic pay of time-rated workers on full-time basis across all industries, regardless of job or position.

[22] Government of the Philippines, Philippine Statistics Authority. 2022. *Labor Force Survey*. Defined as the percent of Filipinos aged 15 years old and over who were in the labor force, or those who were either employed or unemployed.

disease.[23] For the CBA, we recalculated ENPV and EIRR at higher discount rates of 9% and 12%. We also tested the effect of decreasing total benefits by 10%, increasing total costs by 10%, and simultaneously decreasing total benefits by 10% while also increasing total costs by 10%. Finally, a "best case" scenario was tested whereby all procured doses were administered, i.e. no wastage or other losses.

C. Results of the Economic Analysis

14. **CEA.** Table 5 below shows the results of the incremental analysis comparing the cost-effectiveness of the Project vaccines relative to the no-vaccine scenario. Over the analytical time horizon from the time of administration, full vaccination of the beneficiary population created a total cost savings of PHP477.21 billion and averted 117,166 DALYs. This is equivalent to an ICER of -PHP1.28 million per DALY averted. The negative sign of the ICER signifies that the intervention is both more beneficial and less costly than the comparator; in other words, vaccination dominates, i.e., is unequivocally more cost-effective than no vaccination for the population and within the assumptions of the analyzed model.

Table 5: Cost-Effectiveness Analysis Results, Base Case

	Comparator: No vaccines			Intervention: Project vaccines		
Year	Economic cost (PHP billion)	Affected population (000s) [a]	Disease burden (DALYs) [b]	Economic cost (PHP billion)	Affected population (000s)	Disease burden (DALYs)
2021	248.47	7,859	72,945	103.35	3,069	22,202
2022	243.03	7,798	71,835	96.98	5,848	40,640
2023	237.78	7,738	70,760	115.38	6,505	46,405
2024	232.72	7,680	69,720	131.04	7,102	51,475
Total	**962.00**	**31,076**	**285,259**	**446.75**	**22,523**	**160,721**
PV at 6%	**884.76**		**262,227**	**407.55**		**145,061**

Discounted [c] incremental cost, total (PHP billion)	(477.21)
Discounted incremental benefits, total (DALYs averted)	117,166
ICER (PHP billion per DALY averted)	**(0.0041)**

DALY = disability-adjusted life years, ICER = incremental cost-effectiveness ratio, PV = present value.

[a] Refers to all individuals of any age group who experienced COVID-19 disease of any severity.

[b] The DALY is a summary measure of population health that combines the effects of both morbidity and mortality in a single value. One DALY is equivalent to 1 year of "healthy" life lost.

[c] All discounted values in this table are calculated at the base case discount rate of 6%. Source: Asia Development Bank estimates.

15. **CBA.** Table 6 below shows the results of the base case cost-benefit analysis of the Project vaccines. Comparison of averted productivity losses from mortality to cost streams over the time horizon yields an EIRR of 98.97%, with a ENPV of PHP41.34 billion. This base case far exceeds the economic opportunity cost of capital of 6% in the health sector, and 9% or even 12% for public sector projects in general. The cost-effectiveness of the Project is further supported by a BCR of

[23] J. Amlag et al. 2023. Past SARS-CoV-2 infection protection against re-infection: a systematic review and meta- analysis. *The Lancet 401*. 401 (10379). pp. 833 – 842.

1.12, signifying that more than one-for-one economic benefits were gained for every peso spent. The relatively large difference between the EIRR and BCR that persists despite the conservative assumptions around benefit estimation, may be due to not having accounted for additional costs associated with realizing productivity gains, assumed to accrue instantaneously despite the less-than-a-lifetime horizon applied. On the other hand, benefits were also likely underestimated, given that productivity losses due to temporary absenteeism were not included, lower bound values of vaccine effectiveness parameters were applied, and excluding the possibility of re-infections within the same year.

Table 6: Cost-Benefit Analysis Results, Base Case

Year	Project economic cost (PHP billion)	Affected population (000s) [a]	Disease burden averted (DALYs)	Productivity losses due to premature mortality averted (PHP billion) [b]	Direct medical costs averted (PHP billion) [c]	Discounted [d] net benefits (PHP billion)
2021	45.84	3,069	50,743	0.00	25.15	(20.69)
2022	-	5,848	31,195	7.37	21.69	27.41
2023	-	6,505	24,355	1.00	18.71	17.54
2024	-	7,102	18,245	7.15	16.14	19.56
CER	**PHP2.80951 million per DALY averted**					
ENPV	**PHP41.34 billion**					
EIRR	**98.97%**					
BCR	**1.12**					

( ) = negative.
BCR = benefit-cost ratio, CER = cost-effectiveness ratio, DALY = disability-adjusted life years, EIRR = economic internal rate of return, ENPV = economic net present value.

[a] Refers to all individuals of any age group who experienced coronavirus disease (COVID-19) of any severity.

[b] Productivity loss is estimated using the human capital approach but includes only losses due to premature mortality. We assume productivity benefits begin in the year of vaccination.

[c] Figures correspond to 30% of direct medical costs associated with critical COVID-19 case treatment in intensive care, from Philippine Health Insurance Corporation claims data. This is an underestimate of total averted medical costs, which also include cases treated at home and in non-intensive care hospital settings.

[d] All discounted values in this table are calculated at the base case discount rate of 6%.

Source: Asian Development Bank estimates.

16. **Sensitivity analysis.** Table 7 shows the effect on the ICER if, in addition to the base case assumptions, it is also assumed that natural infection confers some degree of long-term protection against re-infection, hospitalization, and death, even in the non-vaccinated population. A recent systematic review and meta-analysis estimates that this protection is present at moderate levels even one-year post-infection. We applied the published protective effect to the comparator arm of the CEA model, and found that doing so decreased economic costs in the no-vaccine scenario by nearly 30% and decreased disease burden by almost 25% relative to the base case where natural infection conferred no immunity into the next cycle. However, as Table 7 shows, even with these large improvements in the comparator case, these were still insufficient to either change the sign of

the ICER or push the ICER beyond the 1x per capita gross domestic product threshold that can be considered a lower bound cost-effectiveness threshold.

Table 7: Sensitivity Analysis of Cost-Effectiveness Analysis with Protective Effect of Natural Immunity

Year	Comparator: No vaccines		Intervention: Project vaccines	
	Economic cost (PHP billion)	Disease burden (DALYs) [a]	Economic cost (PHP billion)	Disease burden (DALYs)
2021	248.47	72,945	103.35	22,202
2022	144.98	44,454	96.98	40,640
2023	169.95	51,774	115.38	46,405
2024	124.72	46,031	131.04	51,475
Total	**688.11**	**215,204**	**446.75**	**160,721**
Difference from base case (% change)	(28.47%)	(24.56%)	No change	No change

Year	Comparator: No vaccines		Intervention: Project vaccines	
	Economic cost (PHP billion)	Disease burden (DALYs) [a]	Economic cost (PHP billion)	Disease burden (DALYs)
Discounted incremental cost [a] (PHP billion)			(233.66)	
Discounted incremental benefits (DALYs averted)			54,549	
ICER (PHP billion per DALY averted)			**(0.00428)**	

() = negative.
DALY = disability-adjusted life years, ICER = incremental cost-effectiveness ratio.
[a] All discounted values in this table are calculated at the base case discount rate of 6%. Source: Asian Development Bank estimates.

17. Table 8 shows the CER, ENPV, and EIRR at 6% (the base case), and recalculated at 9% and 12%, to reflect ADB's current and previous bank-wide economic opportunity cost of capital, respectively. Table 8 also shows the effects of decreasing total benefits by 10%, increasing total costs by 10%, and simultaneously decreasing total benefits by 10% while also increasing total costs by 10%. Finally, to project possible gains if all procured doses had been administered, we analyzed the scenario without losses or wastage. All changes, including those intended to make the Project less cost-effective, still resulted in highly favorable summary statistics as seen below.

Table 8: Additional Sensitivity Analysis

Measure	Base case	All doses administered	Discount: 9%	Discount: 12%	Decrease benefits by 10%	Increase costs by 10%	Decrease benefits + increase costs by 10%
BCR	1.12	2.02	1.12	1.12	1.91	1.02	1.74
ENPV (PHP billion)	41.34	76.90	37.20	33.52	27.26	30.77	28.56
EIRR (%)	98.97	281.41	93.50	88.31	71.68	73.94	62.16

BCR = benefit-cost ratio, EIRR = economic internal rate of return, ENPV = economic net present value. Source: ADB estimates.

18. **Conclusion.** The Project was unequivocally cost-effective and cost-saving. Results were robust in this regard, whether the analysis was carried out incrementally relative to the status quo alternative or internally, and despite uniformly conservative assumptions, undervaluing benefits and overvaluing costs. Vaccinations have long been considered among the most cost-effective public health interventions, and studies of COVID-19 vaccination programs globally have strongly confirmed that these were instrumental to the emergence of economies from the pandemic.[24] The results of our analysis are thus consistent with these global findings.

D. Financial Sustainability Analysis

19. Government spending for health accelerated during the COVID-19 pandemic, with per capita health expenditure reaching $164 and $192 in 2020 and 2021, respectively. Spending for COVID-19 was as high as $32 per capita in 2021, amounting to 16% of the country's current health expenditure (CHE). By 2022, this had decreased to $9 per capita, or only 5% of CHE.[25] This has been attributed to widespread immunity in the population, as well as the need to prioritize funding for routine vaccination and other priority programs of the government.[26]

20. Despite this, trends in the national health accounts attest to the Philippine government's continued commitment to prioritizing spending for health. The share of domestic health expenditure as a share of general government spending has displayed a rising trend over the past 20 years, increasing from 4.75% in 2002 to 7.80% in 2019, pre-pandemic. In per capita terms, the increase is even more pronounced, from $10.13 in 2002 to $57.75 in 2019 (footnote 21). These levels, while on par with countries of similar income level, despite being lower than regional peers, are evidence of deliberate efforts to mobilize more domestic resources to healthcare, sustained by earmarked tax revenues, stable macro-fiscal conditions, and steady economic growth. The Project contributed directly to the successful outcome of vaccinating at least 43.80% of the population, effectively reducing COVID-19 morbidity and mortality and fostering economic growth. The benefits of COVID-19 vaccinations are sustained over a period without additional actions or extra expenses from the government. Sustaining the vaccine information management system and disseminating vaccination protocols also needed only limited resources.

[24] Y. Fu et al. 2023. Cost-effectiveness of COVID-19 vaccination: A systematic review. *Journal of Evidence Based Medicine.* 16 (2). pp.152 – 165.
[25] World Health Organization. *Global health expenditure database*. (accessed 20 June 2024).
[26] D. Cabalza. 2024. *DOH: No budget for new vaccines vs 'FLiRT' variants of COVID-19.*

Annex 2: Client Feedback on the Project

Republic of the Philippines
DEPARTMENT OF HEALTH
Office of the Secretary

BAGONG PILIPINAS

8 August 2025

MR. MOHD SHARIB KHAN
Investment Operations Specialist
Asian Infrastructure Investment Bank
No. 1 Tianchen East Road, Chaoyang District
Beijing, China 100101

Dear **Mr. Khan:**

This has reference to your email dated 16 July 2025 requesting the completion of the Satisfaction Survey Questionnaire for the Second Health System Enhancement to Address and Limit COVID-19 Project (HEAL-2) and Additional Financing (HEAL2-AF).

We are pleased to transmit the accomplished Satisfaction Survey Questionnaire from the Department of Health for your reference (see **Annex**).

For further concerns or clarification, your staff may contact Ar. Cris Jan Banaag, Project Team Leader of the ADB HEAL COVID-19 Project, at (02) 8651-7800 local 1318 or email at crnbanaag@doh.gov.ph and adbhealproject@doh.gov.ph.

Thank you.

Sincerely,

DR. JOEL H. BUENAVENTURA, MPH
OIC - Director IV, Bureau of International Health Cooperation
Project Manager, ADB HEAL COVID-19 Project

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ANNEX

Question	Answer
1. Are the services and support provided by AIIB's Project Team professional, sufficient, and in time, during project preparation and project implementation? Please provide some specifics or examples as an illustration.	Yes. During the height of the COVID-19 pandemic, when mobility and in-person meetings were restricted, the AIIB Project Team maintained timely, sufficient and professional support. Most transactions, especially related to procurement and disbursements, were processed efficiently through remote coordination. Their prompt feedback on document requirements and approvals ensured that the procurement of COVID-19 vaccines was not delayed despite the challenging context.
2. Is it convenient to access the Project Team's services and support? Please provide some specifics or examples as an illustration.	Yes. Despite the travel restrictions and the shift to remote work, AIIB was accessible through virtual platforms and email. Coordination was made easier by their alignment with ADB guidelines, which allowed the Department to follow a unified process. Communication lines were clear and constant, with responsive focal persons providing the needed guidance.
3. Does the Project Team demonstrate flexibility and efficiency during project preparation and project implementation? Please provide some specifics or examples as an illustration.	Yes. AIIB demonstrated flexibility, or willingness to adapt to unified processes, accepting digital documents and remote coordination.
4. What is the value addition of AIIB's financing in the Project?	AIIB's financing significantly contributed to the timely procurement of life-saving COVID-19 vaccines. It helped mobilize urgent funds during the pandemic. This financing enabled the Philippines to provide safe and effective COVID-19 vaccines to meet public health needs at a time of global supply constraints.
5. Will you consider working with the AIIB again in the health sector? Please provide a few specific reasons.	Yes. AIIB provided timely, flexible, and responsive support during a critical public health emergency. Their alignment with co-financiers and their ability to operate effectively in a fully remote setup demonstrated their strong capacity and commitment.
6. Do you have any suggestions for the Project Team and/or the AIIB for them to improve their operations in the future?	Future engagements could benefit from simplified disbursement documentation and more flexibility in emergency procurement. Stronger coordination with implementing agencies at the country level may also help

	further streamline operations.
7. Other comments, such as comments on reporting requirements, approval of project changes, etc.	None.