Mongolia

FY2023 Ex-Post Evaluation Report of Japanese ODA Loan "New Ulaanbaatar International Airport Construction Project" "New Ulaanbaatar International Airport Construction Project (II)"/Technical Cooperation Project Related to ODA Loan "Project for Human Resource Development and O&M Capacity Development for New Ulaanbaatar International Airport"

External Evaluator: Hisae Takahashi, Octavia Japan, Co., Ltd.

0. Summary

The "New Ulaanbaatar International Airport Construction Project" and the "New Ulaanbaatar International Airport Construction Project (II)" (the Project)[1] were implemented to improve the safety, reliability, and convenience of the capital airport by the construction of a new international airport in the suburbs of Ulaanbaatar, thereby contributing to further economic growth in Mongolia.[2] In connection with the Project, a Technical Cooperation Project related to ODA Loan, the "Project for Human Resource Development and O&M Capacity Development for New Ulaanbaatar International Airport" (the Associated TC Project), was also executed to ensure the smooth operation of the new airport and to strengthen its operation and maintenance systems and capabilities. The Project aligns with Mongolia's development policy and development needs at the time of the appraisal and ex-post evaluation. Although there was no specific cooperation or coordination with the projects or assistance by JICA or other development organizations, the Project was consistent with Japan's aid policy and international framework such as the goals of the SDGs at the time of appraisal. Therefore, its relevance and consistency are high. Due to factors such as the rise in material prices, rapid exchange rate fluctuations, specification changes resulting from higher-than-expected passenger demand forecasts, and the addition of components covered by ODA loans, the Project costs significantly exceeded the plan. Additionally, the Project period also significantly exceeded the plan due to factors such as the addition of facilities, unsuccessful bids, and delays in the opening caused by the impact of the COVID-19 pandemic.[3] Therefore, efficiency of the project is low. At the new airport, effects such as an increase in annual passenger numbers, cargo volume, and the number of aircraft takeoffs and landings, as well as a decrease in the rate of delays and cancellations caused by weather conditions, have been observed. Additionally, while the former airport only permitted takeoffs and landings from one direction due to its location, the new airport allows for takeoffs and landings from both directions. Furthermore, the installation of lighting equipment has contributed to the reduction of delays and cancellations. Accordingly, improvements in reliability, safety, and convenience have been

[1] In this evaluation, "New Ulaanbaatar International Airport Construction Project" is referred to as Phase 1 and "New Ulaanbaatar International Airport Construction Project (II)" as Phase 2, and Phase 1 and Phase 2 are collectively referred to as the Project.

[2] The new airport was planned and constructed as the "New Ulaanbaatar International Airport," but it is now named "Chinggis Khaan International Airport."

[3] However, delays caused by the impact of COVID-19 were considered external factors, and the corresponding period was deducted from the actual performance for evaluation purposes (see "3.2.2.2 Project Period" for details).

confirmed. The increase in new flight routes and tourists has also contributed to the promotion of economic activities in the country. Therefore, effectiveness and impacts of the project are high. No issues have been observed in the policy/system, institutional/organizational, technical, and financial aspects, including the current status of operation and maintenance. Thus, sustainability is ensured. Therefore, sustainability of the project effects is very high.

In light of the above, this project is evaluated to be satisfactory.

1. Project Description

Project Location

(Source: Prepared by the external evaluator based on documents provided by JICA)

Photo 1 Chinggis Khaan International Airport

(Source: Japan International Cooperation Agency (JICA))

1.1 Background

In Mongolia, the real GDP growth rate remained robust due to the successful transition to a market economy since 1990, including privatization of state-owned assets, price and production liberalization, and introduction of a financial system, as well as significant improvements in international market conditions in the manufacturing and mining sectors, among others. In particular, the number of foreign visitors to the country continued to increase due to the growth of the service industry, which led to 50% of GDP growth (in 2005), and increased investment in Mongolia's abundant mineral and livestock resources. However, the former airport (Ulaanbaatar International Airport), which was the only international airport in the country, was surrounded by mountains to the south and east, and takeoffs and landings could only be made on the northwest side, causing frequent delays and flight cancellations, and no further expansion projects could be carried out at the same location. Therefore, to address the increasing demand, a decision was made to implement this project by constructing a new airport at a location free from these geographic constraints mentioned above and to relocate its functions. Phase 1 of the Project was approved in 2008. However, the total Project cost was expected to rise due to higher-than-expected increases in the prices of materials and equipment, rapid exchange rate fluctuations, and changes in specifications caused by an upswing in projected passenger demand. Additionally, the Mongolian government could not sufficiently cover the budget, resulting in a shortage of funds. To ensure

the smooth implementation of the Project and the realization of its effects, additional funding through Japanese ODA loans became essential. Consequently, a request for additional loans was made in 2013, leading to the implementation of Phase 2. Moreover, the smooth commencement of operations at the new airport was crucial for ensuring the effectiveness and sustainability of the Project. Given that Mongolia did not have sufficient experience in operating and maintaining an airport with an annual passenger volume of two million, there were challenges related to safety, security measures, and service level improvements. Therefore, the Associated TC Project was implemented to support the development of human resources responsible for the operation and maintenance of the new airport, as well as to establish a maintenance system.

1.2 Project Outline

The objective of the Project is to improve the safety, reliability and convenience of the capital airport by the construction of a new international airport in the suburbs of Ulaanbaatar, thereby contributing to further economic growth in Mongolia.

<Summary of ODA Loan Project>

Loan Approved Amount / Disbursed Amount	28,807 million yen / 28,669 million yen (Phase 1) 36,850 million yen / 36,587 million yen (Phase 2)
Exchange of Notes Date / Loan Agreement Signing Date	March 2008 / May 2008 (Phase 1) April 2015 / April 2015 (Phase 2)
Terms and Conditions	Interest Rate 0.2% (Main part) (Phase 1) 0.01% (Consulting services) (Phase 1) 0.1% (Main part) (Phase 2) 0.01% (Consulting services) (Phase 2) Repayment Period 40 years (Phase 1) (Phase 2) (Grace Period 10 years) (Phase 1) (Phase 2) Conditions for Procurement Tied (Special Terms for Economic Partnership (STEP) (Phase 1), Tied (STEP) (Phase 2)
Borrower / Executing Agency	The Government of Mongolia / Ministry of Road and Transport Development (MRTD)[4]
Project Completion[5]	June 2021
Target Area	Sergelen District, Central Tuv Province
Main Contractors (Over 1 billion yen)	Chiyoda Corporation (Japan) / Mitsubishi Corporation (Japan) (JV)
Main Consultants (Over 100 million yen)	Azusa Sekkei Co., Ltd. (Japan) / Oriental Consultants Global Co., Ltd. (Japan) (JV)

[4] The Ministry was renamed the Ministry of Road and Transport (MRT) in July 2024.
[5] Project completion is defined as the month in which consulting services are completed.

Related Studies (Feasibility Studies; (F/S), etc.)	F/S (Asian Development Bank (ADB), 1993), F/S (European Bank for Reconstruction and Development (EBRD), 2003)
Related Projects	[International Organizations, Aid Agencies, etc.] - ADB: "Ulaanbaatar Airport Feasibility Study" (1992) - EBRD: "Civil Aviation Master Plan Study in Mongolia" (2003)

<Outline of the Associated TC Project>

Overall Goal		NUBIA, the capital airport of Mongolia, is upgraded in its capacity to be able to function appropriately in case of rapid increase of customers as the gateway of the country.
Project Purpose		Mechanism as well as capacity for O&M is strengthened in NUBIA for its smooth inauguration.
Outputs	Output 1	O&M organization is established based on O&M plan including staff allocation.
	Output 2	Implementation capacity for revised maintenance plan of runways etc. at NUBIA is improved.
	Output 3	Implementation capacity for newly developed O&M plan of fuel supply at NUBIA is improved.
	Output 4	Implementation capacity for newly established charge setting system and tenant management plan at NUBIA is improved.
	Output 5	Implementation capacity for newly developed customer satisfaction (CS) plan for upgrading CS at NUBIA is improved.
	Output 6	Implementation capacity for newly developed relocation master plan is improved.
	Output 7	Capacity of Civil Aviation Authority of Mongolia (CAAM)[6] is developed for provision of Air Navigation Services at NUBIA.
Total cost (Japanese Side)		Approximately 589 million yen
Period of Cooperation		January 2015-September 2021 (of which extension period: August 2017-September 2021)
Target Area		Ulaanbaatar City
Implementing Agency		MRTD, CAAM

[6] CAAM is a subordinate organization of MRTD. At the time of the appraisal, it was in charge of airport operations and control, and the former airport was operated by CAAM's Chinggis Khaan International Airport Management Division. In 2019, New Ulaanbaatar International Airport LLC (NUBIA), the operator of the new airport, was established as a joint venture with a consortium of Japanese companies and the Mongolian government, and some staff from the former airport were transferred to NUBIA. In 2020, the National Civil Aviation Center (NCAC) of Mongolia was established as the operator arm of CAAM, and the NCAC is responsible for some operations at regional airports and new airports as an organization directly under CAAM.

2. Outline of the Evaluation Study

2.1 External Evaluator

Hisae Takahashi, Octavia Japan, Co., Ltd.

2.2 Duration of Evaluation Study

This ex-post evaluation study was conducted with the following schedule.

Duration of the Study: September 2023-February 2025

Duration of the Field Study: March 10-March 31, 2024, August 4-August 11, 2024

2.3 Constraints During the Evaluation Study

New Ulaanbaatar International Airport LLC (NUBIA), which is responsible for the operation and maintenance of the new airport, is a private joint venture company, and therefore, its financial status is not publicly disclosed. In analyzing the sustainability from the financial aspect, financial data was not available, therefore, the evaluation was primarily based on interviews with NUBIA staff.

2.4 Methods and Criteria for a Comprehensive Evaluation

Regarding the Associated TC Project, after confirming the achievement of its project purpose, the synergistic effects resulting from collaboration with the Project were analyzed in terms of effectiveness and impact. These finding were taken into consideration in the evaluation. As for efficiency, a comparison of the planned and actual results is provided as a reference but is not taken into account in the evaluation judgment, following the external ex-post evaluation reference.

3. Results of the Evaluation (Overall Rating: B[7])

3.1 Relevance/Coherence (Rating: ③[8])

3.1.1. Relevance (Rating: ③)

3.1.1.1 Consistency with the Development Plan of Mongolia

The development policy at the time of the appraisal, the "*Action Program of the Government of Mongolia for 2004-2008*," outlined specific policies and goals in eight areas: (1) public sector, (2) social policy, (3) economic policy, (4) regional development, (5) environmental policy, (6) defense and disaster measures, (7) foreign policy, and (8) judiciary. Among these, in area (3), the construction of a larger new airport was stipulated. Additionally, at the time of the appraisal of Phase 2, "*Action Program of the Government of Mongolia for 2012-2016*," outlined policies in the following sectors: (1) employment and income security, (2) health, (3) education, (4) a safe society and environment, and (5) free citizens. Under area (1), it aimed

[7] A: Highly satisfactory, B: Satisfactory, C: Partially satisfactory, D: Unsatisfactory

[8] ④: Very High, ③: High, ②: Moderately Low, ①: Low

to develop the new airport into a hub for international passenger and cargo transportation. The "*National Development Strategy*," which set development goals for key areas over two phases (2007-2015 and 2016-2021), aimed to increase the number of international flights by the end of the first phase (2015) through the construction of the new airport and the active utilization of aviation agreements. The "*State Policy on Civil Aviation up to 2020*" (2013) also stipulated that the new airport would be developed as a hub for passenger and cargo transportation in Northeast Asia and that part of the new airport's operations would be outsourced to private companies.

The "*Action Program of the Government of Mongolia for 2020-2024*," at the time of the ex-post evaluation focuses on key policies in the following areas: (1) policies addressing social and economic challenges due to the COVID-19 pandemic, (2) human development policies, (3) economic policies, (4) governance policies, (5) green development policies, and (6) capital, regional, and local development policies. Regarding the airport transportation sector, the program aims to increase the number of flights and routes by expanding international flights and dispersion of traveler numbers and clearly states the commencement and stable operation of the new airport. The long-term development policy "*Vision 2050*" (2020) for the period 2021-2030 indicates that the transportation sector will commence operations of the new airport in Ulaanbaatar and establish it as a hub for passenger and cargo transportation in Northeast Asia. There is no successor policy to the "*State Policy on Civil Aviation up to 2020*" as the national development policy formulated after 2020 is to not issue sector-specific policies and plans separately from the national development policy.

In light of the above, the Project is consistent with Mongolia's development policy at the time of the appraisal and ex-post evaluation.

3.1.1.2 Consistency with the Development Needs of Mongolia

In Mongolia, at the time of the appraisal, there was an increasing trend in the number of foreign visitors, driven by steady economic growth since 1990, the growth of the service industry, and expanded investments in mineral and livestock resources. The number of passengers at Ulaanbaatar International Airport, the country's only international airport, doubled in 2006 from 2003, and further growth in demand was expected. On the other hand, due to the geographical restriction of the airport being surrounded by mountains to the south and east, takeoffs and landings were only possible from the northwest (one direction). Therefore, delays and cancellations were frequent. However, the above-mentioned location made it difficult to meet the increasing demand for air transportation, and it was urgently needed to relocate the airport to a location where geographical constraints could be avoided and to construct a new airport of appropriate size. As shown in the table, passenger and cargo volumes have been increasing from the start of Phase 2 of the Project to the time of the ex-

post evaluation. Passenger volume was limited in 2020 due to the impact of COVID-19, but in 2023 it exceeded the level before the impact of COVID-19, and its demand is expected to continue growing. Furthermore, the Government of Mongolia has designated the years 2023-2025 as "Welcome to Mongolia" to revive tourism after the COVID-19 convergence, and further demand is expected to increase in the future.

Table 1 Annual Passenger and Cargo Volume (International Flights) at the Former and New Airports since the Start of Phase 2 of the Project

	2016	2017	2018	2019	2020	2021	2022	2023
Number of Passengers (Thousands)	791	927	1,021	1,188	162	100	619	1,312
Cargo volume (tons)	4,751	5,266	5,644	5,678	2,643	6,414	12,869	8,556

Source: National Statistics Office of Mongolia
Note: The data shows the volume handled by the former airport before July 2021 and the new airport thereafter.

3.1.1.3 Appropriateness of the Project Plan and Approach

In the Project, as stated in "3.2 Efficiency," an additional loan (Phase 2) was implemented due to the funding shortfall, and some components were modified or added. As a result, the outputs increased, however, all of these outputs were essential facilities necessary for the airport's functionality, and there were no issues with their validity. The expected effects were also generally achieved, and the approach taken was considered appropriate. Moreover, lessons learned from similar projects in the past include: "It is important to determine the timing and scale of project implementation based on careful analysis of factors affecting demand forecasts, to establish an appropriate operation and maintenance system, and to secure costs", and "Airport operating entities need to strengthen organizational management, human resources, and technical capacity, and finances to operate airport facilities in a sustainable and self-reliant manner." In response to the said lessons learned, changes to the Project plan were decided after consultation and review with the consultant as appropriate. Additionally, lessons learned from similar projects in the past were utilized in the implementation phase of the Project, such as the implementation of the Associated TC Project to support the smooth relocation from the former airport to the new airport, and the contribution of such supports was confirmed.

3.1.2 Coherence (Rating: ②)

3.1.2.1 Consistency with Japan's ODA Policy

At the time of the appraisal for Phase 1, the "*Country Assistance Policy for Mongolia*" (2004) prioritized infrastructure development support, and the "*Operational Policy for Overseas Economic Cooperation Operations*" (2005) identified the foundation development for sustainable growth as a key focus area for assistance. The "*Country Assistance Policy for Mongolia*" (2012) at the time of the appraisal for Phase 2 identified strengthening the

functions of the city of Ulaanbaatar as a priority area, and the JICA Country Analysis Paper at the time also identified infrastructure development and improving urban planning and management capacity as key issues. The Project aims to improve the safety and reliability of the capital airport and increase its convenience by constructing a new airport, thereby contributing to the country's further economic development, consistent with Japan's aid policy at the time of the appraisal.

3.1.2.2 Internal Coherence

At the time of the appraisal, the implementation of projects in cooperation with the Project was not assumed. JICA did not implement any projects in the related fields, except for the Associated TC Project thereafter.[9]

3.1.2.3 External Coherence

During the implementation of the Project, no directly related projects were carried out. The Project aimed to contribute to Mongolian economic development by improving the safety and reliability of the capital airport through the construction of a new airport. In alignment with the international framework, it is consistent with SDGs Goal 9: Industry, Innovation and Infrastructure (Build resilient infrastructure, promote inclusive and sustainable industrialization, and foster innovation).[10]

As mentioned above, the Project is in line with Mongolia's development policy and development needs, and there are no issues with the Project plan and approach. The consistency with Japan's aid policy, and international frameworks was also confirmed. Therefore, its relevance and coherence are high.

3.2 Efficiency (Rating: ①)

In the Project, as stated in "3.2.2.1 Project Cost," due to the increase in the contractor's contract amount and the deterioration of Mongolia's financial situation, a funding shortfall occurred, leading to the implementation of Phase 2 (additional loan). However, since the changes in the Project scope was limited, the analysis of efficiency is based on a comparison between the Phase 1 plan and actual results.

3.2.1 Project Outputs

The project consisted of 1) runway development, 2) terminal building construction, 3)

[9] Source: Questionnaire answers from CAAM
[10] Source: SDGs document. https://www.mofa.go.jp/mofaj/gaiko/oda/sdgs/about/index.html (checked on September 11, 2024)

construction of airport-related facilities and procurement of equipment for the new airport, and 4) consulting services. The planned and actual outputs are shown in the table below.

Table 2 Planned and Actual Outputs

Item	Plan	Actual
1) Runway development Runway Taxiway Aprons	 3,600 m × 45 m 4,160 m × 23 m 101,084 m^2	 As planned 4,142 m × 23 m 108,800 m^2
2) Terminal building construction Passenger Cargo[Note 1]	 31,200 m^2 2,380 m^2	 33,300 m^2 3,689 m^2
3) Construction of airport-related facilities and procurement of equipment	- Control tower (including related facilities such as communications) - Aviation security facilities (radio facilities, aviation lights, etc.) - Fire and rescue facilities - Car parks - Access road within the airport - Power supply system - Heating system - Water supply system - Sewerage treatment system - Solid waste disposal system - Fueling system - Vehicles (firefighters/ ambulance, ground support vehicles) - GSE[Note 2] equipment, GSE building - Airport maintenance equipment	Modification: Fueling system Added: Terminal bridge, runway centerline lights Added: Aircraft hangar, heated parking
4) Consulting services	Phase 1: Design and bid support, construction supervision, environmental management support, etc. Phase 1: Design, construction supervision, etc.	As planned

Source: Documents provided by JICA, questionnaire answers from MRTD and CAAM
Note 1: Components implemented with Mongolian funding.
Note 2: Refers to Ground Service Equipment (GSE).
Note 3: Scopes underlined were added in Phase 2.

The changes from the plan for each item and their reasons are as follows.

<Description and reasons for changes>[11]

-Description of the change: 2) Expansion in cargo terminal building construction

Reason: The need for a cargo handling area (for imports and exports) and office space was requested by the Mongolian side, leading to the expansion.

-Description of the change: 3) Change of fueling method[12]

Reason: Due to the increase in air travel demand exceeding forecasts and the anticipated operation of large aircraft, the planned refueler fueling method at the time of the appraisal was changed to a hydrant fueling method to improve the efficiency of ground support operations and from the perspective of winter (severe sub-zero temperatures) operations.[13]

-Description of the change: 3) Addition of terminal bridge

Reason: Due to a strong request from the Mongolian side to separate the departure and arrival floors within the terminal, adding a terminal bridge became necessary.

-Description of the change: 3) Addition of centerline lights

Reason: Runway centerline lights were installed to ensure the safe operation of aircraft during nighttime, particularly when visibility is limited due to fog.

-Description of the change: 4) Addition of aircraft hangar

Reason: Although the construction of the aircraft hangar was initially planned to be funded by a private airline, it became impossible for the airline to bear the costs due to the airline's deteriorating financial condition at the implementation stage. On the other hand, since the hangar is essential for airport operations, the decision was made to proceed with its construction.

-Description of the change: 4) Addition of heated parking

Reason: Since parking cars outdoors in extremely cold conditions during the winter can cause breakdowns, it was decided to install the heated parking based on need.

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[11] Source: Questionnaire responses and interviews from MRTD and CAAM.

[12] There are two methods of aircraft fueling: the Refueler Method and the Hydrant Method. In the refueler method, a tanker-type dedicated refueling vehicle is attached to the aircraft and refuels the aircraft from the vehicle's fuel tank. The refueling volume is relatively low, and this method is often used at airports with many domestic flights. In the hydrant system, fuel is delivered to the aircraft through a refueling port located at a spot on the apron. This system is used at airports with a large number of jet aircraft.

[13] According to airport staff, when large jet aircraft are in service, refueling using the refueler method takes over two hours with three vehicles, and there were concerns about issues such as the fuel and water in the refueling vehicles freezing due to Mongolia's harsh climate. On the other hand, the hydrant method can complete the same task in about 30 minutes.


Photo 2 Waiting Area at Departure Terminal Photo 3 Convenience Store in the Airport

(Source: taken by the external evaluator)

The expansion of the passenger terminal area and the change in the refueling system method were made in consideration of increased demand and respective functions. The runway centerline lights were also added as needed from a safety perspective. The addition of aircraft hangars became unfeasible due to the economic situation of the private airline, but their installation was essential for the operation of the airport. All of these changes were considered reasonable as they were indispensable for the airport facilities and the expected outcomes.

3.2.2 Project Inputs

3.2.2.1 Project Cost

The total cost of the Project was planned to be 34,244 million yen (ODA loan: 28,807 million yen). However, due to the significant increase in material prices and labor costs,[14] rapid exchange rate fluctuations, and changes in refueling methods due to an upswing in projected passenger demand, etc., the contract amount with the contractor greatly exceeded expectations. Additionally, the GSE equipment, GSE buildings, aircraft hangars, and heated parking facilities, which were expected to be procured and developed with Mongolian and private funds, could not be financed due to the deterioration of the Mongolian financial situation. Therefore, these items were implemented in the second phase (additional loan). As a result of these changes, the total actual Project cost was 70,896 million yen (ODA loan: 65,256 million yen), significantly exceeded the plan (207% of the plan).

(Reference) Project cost of the Associated TC Project: The actual cost was approximately 589 million yen, which significantly exceeded the planned amount of 350 million yen (168% of the plan). The factors were the delays in the construction of airport facilities, the establishment of the airport operating company, and the delay in the airport opening caused by the impact of the

[14] From the signing of the L/A to the contractor contract, the cost of reinforced concrete increased by 159%, gasoline by 131%, and average wages by 222%

COVID-19 pandemic, which extended the project period and consequently increased the project costs. The implementation of the Associated TC Project aimed to ensure the smooth operation of the airport, with its activities planned to align with the execution of the Project. Although delays in the Project affected the progress of the Associated TC Project's activities, these delays were beyond the control of the Associated TC Project. Consequently, the increase in the project cost was an unavoidable response.

3.2.2.2 Project Period

The Project period[15] was planned to be 89 months, from May 2008 to September 2015, however, the actual Project period was 158 months, from May 2008 to June 2021. No contract changes occurred due to the impact of COVID-19. However, the opening of the new airport was postponed by a total of 13 months as a result of a decision by the Mongolian government influenced by the pandemic. This delay was deemed to be caused by external factors. Therefore, the actual Project period of 158 months was adjusted by subtracting the 13-month delay, resulting in a revised actual period of 145 months. Comparing the planned period (89 months) with the actual period (145 months), it results in 163%, significantly exceeded the plan (163% of the plan). If the actual period of 158 months, without accounting for external factors, is compared to the planned period (89 months), the result is 178%.

The major reasons for the delays were as follows.[16]

- Delays in the commencement of additional facility and utility construction, etc.

The addition of facilities such as the GSE building, heated parking, and aircraft hangar required time for design review, location determination, procurement, and document preparation, resulting in delays.

- Influence of the Great East Japan Earthquake on contractor agreements

Due to the impact of the Great East Japan Earthquake in 2011, major construction companies in Japan were engaged in reconstruction work, resulting in no bidding companies and three re-tenders, which caused delays.

- Delay in the opening of the airport (facility operation start month)

The contract was delayed because it took time to reach an agreement with the Mongolian government on the terms and conditions of the concession after the opening of the new airport, leading to a delay in the opening of the new airport.

- Impact of the COVID-19 epidemic

Due to the impact of COVID-19, the opening of the airport was postponed by a total of 13

[15] As defined at the time of the appraisal, the Project period of Phase 1 is defined as the month the loan agreement is signed to the month consultancy services are completed.

[16] Source: Documents provided by JICA, interviews with the executing agency

months, from July 2020 to October 2020 by the Government of Mongolia's Resolution No. 277, and further to July 2021 by Resolution No. 134.

(Reference) Project period of the Associated TC Project: The Project period was planned to be 32 months, from December 2014 to July 2017, however, the actual Project period was 81 months, from January 2015 to September 2021, significantly exceeded the plan (253% of the plan).[17] The factors for the delay were similar to those of the Project, including the construction of airport facilities, delays in the establishment of the operating company, and the impact of the COVID-19 pandemic on the opening of the new airport. Of the approximately four-year extension to the Associated TC project period, around one year is attributed to the delay in the new airport's opening caused by the impact of COVID-19.

3.2.3 Results of Calculations for Internal Rates of Return (Reference only)

(1) Financial Internal Rate of Return (FIRR)

At the time of the appraisal, the FIRR was calculated to be 0.5%, considering aviation-related revenues (airport usage fees, landing and takeoff fees, etc.) and non-aviation-related revenues (tenant income, etc.) as benefits, and project costs and operation and maintenance costs as expenses, with a project life of 40 years.[18] Recalculation was attempted during the ex-post evaluation under the same conditions as those at the time of the appraisal, resulting in an FIRR of -2.9%. The primary factors were delays in project implementation and project cost exceeding the planned estimates.

(2) Economic Internal Rate of Return (EIRR)

The EIRR was recalculated by considering the income generated from foreign tourists and the reduction in delays and cancellations as benefits, while including project costs and maintenance expenses as costs, with a project lifespan of 40 years. Since maintenance expenses were not included as costs in the EIRR calculation sheet at the time of the appraisal, a recalculation was conducted during the ex-post evaluation including these expenses, resulting in an EIRR value of 11.5%[19] at the time of the appraisal. Recalculation of the EIRR under the same conditions resulted in 5.1%, which is lower than the IRR value at the time of the appraisal. The factors include the significant extension of the Project period, the limited benefits due to the impact of COVID-19, and the increase in project costs beyond the initial estimates.

[17] The Associated TC Project was also delayed due to the impact of COVID-19, which extended the project period with the delay in the opening of the new airport. Considering the 13 month impact of COVID-19, similar to the Project, the actual project period was 69 months (81 months - 12 months), resulting in 216% of the plan.

[18] FIRR was not calculated at the time of the appraisal for Phase 2.

[19] The EIRR value at the time of the appraisal was calculated to be 14% for Phase 1 and 13.2 % for Phase 2. However, since maintenance expenses were not included as costs, the EIRR value including these expenses was 11.5%, which was considered the EIRR value at the time of the appraisal.

In light of the above, the Project cost significantly exceeded the plan due to factors such as the rise in material prices, rapid exchange rate fluctuations, specification changes due to higher-than-expected passenger demand, and the addition of ODA loan components. Additionally, the Project period also significantly exceeded the plan due to factors such as the addition of facilities, unsuccessful bids, and delays in the airport opening caused by the impact of COVID-19. Therefore, efficiency of the project is low.

3.3 Effectiveness and Impacts[20] (Rating: ③)

3.3.1 Effectiveness

3.3.1.1 Quantitative Effects (Operation and Effect Indicators)

In the Project, the wind coverage ratio, the number of passengers, the number of foreign passengers, the cargo volume, the number of aircraft takeoffs and landings, and rate of delays and cancellations caused by weather conditions were set as the operation and effect indicators to analyze the Project's effectiveness.

Table 3 Baseline, Target, and Actual Values for Operation and Effect Indicators

	Baseline value	Target value	Actual value		
	2005	2 Years After Completion	2021 Completion Year	2022 1 Year After Completion	**2023 2 Years After Completion**
Wind coverage ratio during the lowest months (%) Note 1	73	98	NA	NA	NA
Annual number of passengers (10,000 persons) Note 2 (Of this, international flights)	47 (34)	165 (138)	19.9 (10)	95.3 (62)	**173.1** **(131)**
Annual number of foreign passengers (10,000 persons) Note 2 (Annual number of foreign passengers in Mongolia)	11 (34)	45	NA (4)	NA (30)	NA **(64)**
Annual cargo volume (ton) (Of this, international cargo)	2,344 (2,334)	11,900 (9,200)	6,429 (6,414)	12,893 (12,869)	**8,574** **(8,556)**
Annual number of aircraft takeoffs and landings (Of which, international flights)	7,593 (3,546)	22,200 (14,500)	7,098 (2,435)	14,153 (5,334)	**19,964** **(9,654)**
Rate of delays and cancellations caused by weather conditions (%)	2.3	0.5	0.02	NA	**0.14**

Source: Documents provided by JICA, documents provided by MRTD and CAAM, National Statistics Office of Mongolia

Note 1: It refers to the percentage in the month with the lowest probability of occurrence of wind direction and wind speed assumed to be available for takeoff and landing.

Note 2: The baseline values for the number of passengers and the number of foreign passengers refer to the total of departures and arrivals at the former airport. Note that data on the number of foreign passengers at the new airport has not been aggregated at the time of the ex-post evaluation. Therefore, the actual figures are listed as a reference value based on the annual number of foreign passengers in Mongolia. This actual figure also includes foreign passengers entering Mongolia by land.

Note 3: The records for which no information was provided by the executing agency are marked as NA.

[20] When providing the sub-rating, Effectiveness and Impacts are to be considered together.

At the new airport, although it was affected by the COVID-19 pandemic at the time of project completion (2021), the performance showed signs of recovery two years after project completion (2023). The "annual number of passengers" and the "rate of delays and cancellations caused by weather conditions" have met the target values, and the "annual number of aircraft takeoffs and landings" has also reached 90% of the target value. According to CAAM, the number of aircraft takeoffs and landings slightly fell short of the target due to the ongoing shortage of airline staff caused by the impact of COVID-19. This shortage particularly affected international flights, resulting in fewer flights than assumed. On the other hand, the operation of large aircraft, which could not be accommodated before, has become possible at the new airport. As a result, while the number of flights has decreased, the number of passengers has been steadily increasing. Although the annual cargo volume exceeded the target value in 2022, the actual figure for 2023 remained at about 70% of the target value. CAAM explained that one contributing factor was the significant increase in air transportation during the period when COVID-19 was spreading, due to restrictions on land transportation. In 2023, land transportation resumed, and it is considered that the numbers are lower compared to 2022.[21] Although data on the wind coverage ratio during the lowest months was not available, CAAM reported that this ratio improved at the new airport due to the ability to take off and land from both directions. Since the "annual number of foreign passengers" at the new airport was not tabulated, it was not possible to determine the status of achievement. On the other hand, as a reference value, the annual number of foreign passengers in Mongolia (including air, rail, and land routes) was confirmed. Although it significantly decreased in 2021 due to the impact of COVID-19, a substantial increase was observed in 2022 and 2023. It is considered that the development of the new airport has also contributed to this increase.

3.3.1.2 Qualitative Effects (Other Effects)

At the time of the appraisal, two qualitative effects were expected through the project implementation: (1) improvement of airport safety and reliability, and (2) improvement of airport convenience. The status of these effects, as confirmed at the time of the ex-post evaluation, is as follows.

(1) Improvement in Reliability and Safety

At the new airport, it is now possible to take off and land from both directions on the runway, reducing delays and cancellations caused by weather and wind conditions that frequently

[21] According to CAAM, air cargo traffic peaked in 2022 after the COVID-19 pandemic and has been on a downward trend since then. However, in Japan, a significant increase was seen in 2021, and it began to decline again after 2022, etc. (Source: Japan Aircargo Forwarders Association, Air Cargo Handling Results), thus it is thought that different trends can be seen in different regions.

occurred at the former airport. As a result, punctuality has been ensured, and the reliability of air services has improved. Additionally, the former airport was close to the city center, and poor visibility due to air pollution was a safety concern. On the other hand, the new airport is located far from residential areas, and the installation of runway centerline lights has reduced the impact of heavy fog, bad weather, and air pollution on visibility, contributing to improved safety.

(2) Improvement of Convenience

According to interviews with airport users,[22] the convenience of the new airport has significantly improved compared to the firmer airport. For example, although the situation varies slightly depending on the season, day of the week, and time of day,[23] the waiting time for boarding and departure has been reduced at the new airport compared to the former one. Moreover, the expansion of the passenger terminal area compared to the former airport has also improved spatial comfort. The installation of Wi-Fi connections, desks, and power outlets, which were not available at the former airport, has helped passengers make better use of their waiting time and has received high marks from users. Furthermore, the passenger terminal has restaurants, cafes, convenience stores, shops, banks, and florists, offering a greater variety and number of stores compared to the former airport. It can also be said that the efficiency with which airport staff carry out their duties has contributed to the improvement of the situation. These improvements have been recognized, and in 2024, the new airport was certified as a 4-star airport by SKYTRAX.[24] However, many have pointed out that access to the new airport takes more time compared to the former airport,[25] and the lack of public transportation makes it difficult to travel.[26] Currently, taxis are available 24 hours a day at the airport arrival level. However, traveling between the airport and Ulaanbaatar city center by taxi is generally expensive in Mongolia, and there have been many requests for public transportation services connecting Ulaanbaatar city and the airport.

3.3.1.3 Achievement of the Outputs and Project Purpose of the Associated TC Project

The indicators for the outputs and project purpose set in the Associated TC Project were all

[22] In the first field survey, 15 people (Seven males and eight females) (three in their 20s, four in their 30s, four in their 40s, and four in their 50s), including eight airport users, three store staff, two taxi drivers, and two airport staff, were interviewed about the convenience of the new airport.

[23] For example, waiting times tend to increase during peak travel seasons and when flights take off and land at the same time.

[24] SKYTRAX, a UK-based airline service research company, assesses airport facilities, services, maintenance, cleanliness, and more. Based on passenger satisfaction surveys, they rate international airports and airlines from 1 to 5 stars.

[25] The distance from Ulaanbaatar city center to the former airport is approximately 15 km, while the distance to the new airport is about 50 km.

[26] According to CAAM, there was a period in the past when buses operated between the new airport and Ulaanbaatar city; however, as of the field study in August 2024, the service had already been discontinued. Subsequently, the executing agency reported that, in response to passenger demand, bus operations between the new airport and Ulaanbaatar city had resumed as of February 2025.

achieved by the time of project completion, as shown in the table below (including some information updated by the time of the ex-post evaluation).

Table 4 Achievement of the Project Purpose and Outputs

Project Purpose and Outputs	Status of achievement
Project Purpose: Mechanism as well as capacity for O&M is strengthened in the new airport for its smooth inauguration.	Achieved
Output 1: O&M organization is established based on O&M plan including staff allocation.	Achieved
Output 2: Implementation capacity for revised maintenance plan of runways, etc. at the new airport is improved.	Achieved
Output 3: Implementation capacity for newly developed O&M plan of fuel supply at the new airport is improved.	Achieved Although the majority of staff who underwent the training are no longer present due to transfers or resignations, operations have been conducted and continued without issue under the jurisdiction of CAAM.
Output 4: Implementation capacity for newly established charge setting system and tenant management plan at the new airport is improved.	Achieved Due to the impact of COVID-19, the tenant shops that had not opened by the completion of the project are now operating smoothly at the time of the ex-post evaluation.
Output 5: Implementation capacity for newly developed customer satisfaction (CS) plan for upgrading CS at the new airport is improved.	Achieved At the time of project completion, the numbers of international flights and passengers were limited due to the impact of COVID-19. However, both have shown a recovery trend at the time of the ex-post evaluation.
Output 6: Implementation capacity for newly developed relocation master plan is improved.	Achieved The actual relocation work was completed smoothly.
Output 7: Capacity of CAAM is developed for provision of Air Navigation Services at New Airport.[27]	Achieved Air Navigation Services are being carried out and continued without any issues under the jurisdiction of CAAM.

Source: Project Completion Report, interviews with staff of CAAM and NUBIA

[Effects generated through the collaboration of the Project and the Associated TC Project]

All activities and indicators for the outputs 1 to 7 were generally achieved by the completion of the Project, and the main objective of smoothly transferring operations from the former airport to the new airport was accomplished. For Mongolia, this was the first experience of airport relocation, and through the implementation of the Associated TC Project, the relocation plan was formulated, and the relocation was carried out without any issues in accordance with the plan. The Associated TC Project created a prioritized list specifying which facilities to relocate, when

[27] Output added in April 2016. (Source: Project Completion Report)

to relocate them, and how to proceed, forming the basis for the relocation plan. Initially, the plan was developed separately by each department. However, the related departments revised the plan through repeated discussions and coordination, which contributed to the smooth relocation process. According to CAAM and NUBIA staff, the implementation of the Associated TC Project was considered essential for the smooth operation of the new airport.

The training provided by the Associated TC Project has also influenced changes in awareness regarding airport operations. Through the training, airport staff have learned business perspectives, operational efficiency, and the implementation of tasks according to plans, which they were not conscious of during the former airport operations. It has been confirmed that they are now applying these aspects in their daily work. According to NUBIA staff, the former airport prioritized security, with little consideration for business efficiency. However, through the Associated TC Project, opportunities were provided to learn the importance of various aspects, including not only security but also efficiency, customer service, task execution according to plans, and staff health. The foundational knowledge gained through training has become integral to their daily operations.

3.3.2 Impacts

3.3.2.1 Intended Impacts

At the time of the appraisal, it was expected that the construction of the new airport would contribute to the revitalization of society and the economy through increased foreign investment and enhanced air transport capacity. This survey confirmed the following impacts.

(1) Strengthen Air Transportation Capacity (Increase in Flights, Number of New Flights, etc.)

The number of flights in the country has decreased since 2020 due to the impact of COVID-19. However, as noted in "3.3.1 Effectiveness", the new airport has seen an increasing trend in passenger numbers and cargo volumes. This can be attributed to the fact that, despite the decrease in the number of flights, the new airport is capable of accommodating large aircraft that the former airport could not.

Table 5 Number of Flights in Mongolia

(Unit: number of flights)

2018	2019	2020	2021	2022	2023
131,801	143,805	73,163	71,150	51,718	63,463

Source: National Statistics Office of Mongolia

According to CAAM, seven new airlines[28] have started operations since the opening of the

[28] Eznis Airways (Mongolia), Air Incheon (South Korea), Jeju Air (South Korea), T'way Air (South Korea), Spring Airlines (China), IrAero (Russia), KrasAvia (Russia)

new airport. Domestic airlines are steadily increasing the number of new flights to 53 new destinations in 23 countries, confirming that the new airport is helping to strengthen the country's air transportation capacity. In August 2023, an Open Skies Agreement was officially signed with the United States, .and the launch of direct flights to San Francisco is also being planned.

(2) Economic Revitalization through Increased Foreign Investment, etc.

Following the opening of the new airport, it is considered premature to judge the contribution of the Project to the amount of foreign investment inflows and GDP growth rate, partly due to the impact of COVID-19. On the other hand, despite the impact of COVID-19, the number of tourists significantly increased in 2023, and it can be said that the development of the new airport contributed to this growth. Although there is no data on the share of tourism in GDP, the trade, hotel, and restaurant industries account for an average of approximately 17% annually,[29] suggesting that they make a certain contribution to the country's economic activity.

Table 6 Foreign Direct Investment Inflows Amount

(Unit: million US$)

2015	2016	2017	2018	2019	2020	2021	2022
1,396	1,486	2,086	2,729	3,131	2,560	2,714	3,418

Source: National Statistics Office of Mongolia

Table 7 GDP Growth Rate

(Unit: %)

2015	2016	2017	2018	2019	2020	2021	2022	2023
3.0	1.2	5.9	7.0	7.1	-7.6	6.6	1.8	7.1

Source: National Statistics Office of Mongolia

Table 8 Number of Tourists

(Unit: thousands of people)

2015	2016	2017	2018	2019	2020	2021	2022	2023
121	150	191	222	260	8	1	123	321

Source: National Statistics Office of Mongolia

[The Associated TC Project] Achievement of the Overall Goal

Overall goal: New Airport, the capital airport of Mongolia, is upgraded in its capacity to be able to function appropriately in case of rapid increase of customers as the gateway of the country.

Indicator 1: New Airport is installed with the capacity to handle annual demand of passengers of two million properly.

[29] Source: National Statistics Office of Mongolia

Indicator 2: Convenience of stakeholders, such as airlines using New Airport, is increased.

At the time of completion of the Associated TC Project, the prospect of achieving the overall goal was considered "partially achieved" due to the significant decrease in air passengers caused by the impact of COVID-19. However, at the time of the ex-post evaluation, the annual passenger numbers reached 1.73 million, exceeding the target value, and the number of new flight routes has been also steadily increasing. The new airport is designed to handle two million passengers annually. Although the number of passengers in 2023 did not reach two million, the number of international passengers from January to May 2024 (winter season) increased by 1.4 times compared to the same period in 2023. According to MRTD, considering the increase in demand during the summer (high season), the number of passengers in 2024 is expected to exceed 2.4 million. Additionally, unlike the former airport, where takeoffs and landings were only possible from the north side due to geographical constraints, the new airport allows for takeoffs and landings from both directions. The introduction of runway centerline lights has also improved safety during nighttime and limited visibility conditions. Furthermore, the new airport can accommodate all large passenger aircraft (except the Boeing 747-8 and Airbus A380). As a result, delays and cancellations have been reduced, confirming the improved convenience for airport personnel.

3.3.2.2 Other Positive and Negative Impacts

1) Impacts on the Environment

The Project was classified as Category A as it falls under the airport sector as stipulated in the "JBIC Guidelines for Confirmation of Environmental and Social Considerations" (formulated in April 2002). It was considered that the Associated TC Project would have minimal or no adverse impact on the environment and society, and it was classified as Category C according to the "JICA Guidelines for Environmental and Social Considerations (formulated in April 2010." The Environmental Impact Assessment (EIA) report of the Project was approved by Mongolia's Ministry of Nature and Environment in June 2007. Although noise simulation results indicated that aircraft noise would not affect residential areas around the airport, measures to address air pollution such as restricting the idling of aircraft and work vehicles at the airport, introducing low-emission vehicles, installing wastewater treatment facilities to meet domestic standards for wastewater generated at the airport, and proper disposal of waste following domestic collection and disposal systems were planned. Additionally, to address the impact on water quality and soil due to the change in the refueling system from the refueler method to the hydrant method, seamless pipes that prevent oil leakage into the ground are being used. It was also planned to install oil leak detectors at the connection points between the pipes and equipment to monitor continuously. Furthermore, during

construction and operation, the executing agency planned to monitor air quality, water quality, noise and vibration, and the natural environment and they were to submit a monitoring report annually to the Mongolian State Specialized Inspection Agency for approval. During the project implementation, mitigation measures were carried out according to the plan, and monitoring was conducted by the contractor. The reports were submitted to the Mongolian State Specialized Inspection Agency and received approval. Additionally, it was confirmed by the executing agency that reports are submitted every four years even after the project's completion. There are no residential areas near the new airport, and no complaints have been received from residents during or after the implementation.

2) Resettlement and Land Acquisition

As all the land for the Project is government property, land acquisition and resettlement were not anticipated at the time of the appraisal. In fact, neither resettlement nor land acquisition occurred.

3) Gender Equality

At the time of the appraisal of the Project, it was assumed that a spacious nursing room would be provided in the passenger terminal building of the new airport, ensuring a design that would be convenient for mothers with infants. In practice, facilities that can be used by mothers with infants and children have been developed, and it has been confirmed that the design reflects the needs of women. These facilities are being utilized by mothers with infants and children, as well as their families.

4) Marginalized People

The design of the new airport incorporates considerations for people with disabilities, the elderly, pregnant women, and children. For example, wheelchairs are readily available at the information desks on each floor to ensure ease of use for individuals with such needs. Additionally, tactile paving for visually impaired individuals has been installed from the parking lot to the information desks on each floor, ensuring an accessible pathway. Multipurpose restrooms are also available on every floor. According to airport staff, these facilities are being effectively utilized by their intended users.

5) Social Systems and Norms, People's Well-being and Human Rights

No specific or direct activities from the perspective of social systems, norms, people's well-being, or human rights were indicated at the time of the appraisal, and no related impacts occurred during or after implementation of the Project.

6) Unintended Positive / Negative Impacts: Contribution to Medical Support During the COVID-19 Pandemic

Under the directive of the Mongolian government, the state-owned airline MIAT transported 8.6 million doses of vaccines to Mongolia on 41 international flights during the challenging pandemic period in 2021. Additionally, MIAT operated 800 flights connecting Asia and Europe to transport medicines, medical equipment, relief supplies, and various products from overseas. At the new airport, facilities such as the newly developed cargo terminal and the expanded capacity of refrigeration and freezing facilities compared to the former airport also contributed to the transportation and reception of those goods. During the COVID-19 pandemic, the cargo terminal played a vital role in receiving medical supplies, including vaccines delivered as emergency aid, and functioned as an essential facility for their proper storage and handling.

Photo 4 Nursing Room

Photo 5 Installed Multipurpose Toilet

(Source: taken by the external evaluator)

While the new airport was temporarily affected by COVID-19 after its opening, the annual number of passengers, cargo volumes, number of aircraft takeoffs and landings, and the rate of delays and cancellations have improved, generally reaching the target values. Due to location constraints, the former airport only allowed take-offs and landings from one direction. However, take-offs and landings are now possible at the new airport from both directions. Additionally, the installation of lighting equipment and other improvements have reduced delays and cancellations. As a result, the reliability and safety of the airport as the capital's primary airport have also been confirmed to have improved. Although there is room for improvement in access to the new airport, it is well-equipped with facilities, shops, and services, resulting in high customer satisfaction regarding convenience. The number of new flight routes and tourists has increased since the airport opened. Although indirectly, it can be said to contribute to the promotion of the country's economic activities.

In light of the above, this project has mostly achieved its objectives. Therefore, effectiveness

and impacts of the project are high.

3.4 Sustainability (Rating: ④)

3.4.1 Policy and System

The revised Civil Aviation Law (2023), which will come into effect in 2025, aims to strengthen regulations on civil aviation activities within Mongolia and its airspace and to improve aviation safety, efficiency, and accessibility, and the relevance of the Project, which aims to enhance the safety, reliability, and convenience of the capital's airport, is maintained. Additionally, in 2022, Parliamentary Resolution No. 143 concerning the development plan for the new satellite city of Zuunmod near the airport was approved. The resolution expects that the city, including the new airport, will create a favorable environment for tourism, business, finance, trade, services, and investment, while also serving as a hub for production, innovation, transportation, and logistics, thereby contributing to the promotion of economic growth.

3.4.2 Institutional/Organizational Aspect

The new airport is operated and maintained by New Ulaanbaatar International Airport LLC (NUBIA), a joint venture funded and participated in by a consortium of Japanese companies[30] and a Mongolian state-owned enterprise, under a 15-year concession agreement with the Mongolian Government's National Development Agency.[31] However, the maintenance of certain facilities, such as the control tower, runway centerline lights, and refueling systems, falls under the jurisdiction of CAAM, with the National Civil Aviation Center (NCAC),[32] a subsidiary of CAAM, responsible for their upkeep.[33] The majority of the staff from the former airport have been transferred to NUBIA or NCAC and are now engaged in the operation and maintenance of the new airport. At the time of the ex-post evaluation, NUBIA had approximately 660 employees, CAAM had about 100 employees, and NCAC had about 1,500 employees, with no reports of staffing shortages up to that point. However, the impact of COVID-19 is decreasing and the number of airport users is increasing, and some departments are expected to need additional staff in the future.[34]

As mentioned above, NUBIA and CAAM are in charge of the operation and maintenance of the new airport, and the division of roles among these organizations is clear. Although some departments will require additional staff in the future, the number of staff at the time of the ex-post evaluation has been secured, and there are no issues in institutional/organizational aspects.

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[30] Mitsubishi Corporation, Narita International Airport Corporation, Japan Airport Terminal Co., Ltd., and JALUX Inc. are participating.
[31] The agency was reorganized into the Ministry of Economic Development in 2022.
[32] NCAC is also responsible for the maintenance of airports in regions within Mongolia.
[33] Source: Documents provided by JICA, interviews with CAAM
[34] Source: Responses to the MRTD and CAAM questionnaires, and interviews with each department during the site visit.

3.4.3 Technical Aspect

Many of the staff members in each department engaged in the operation and maintenance of the new airport have expertise in airport facility maintenance, gained from their experience in operating and maintaining the former airport. Additionally, they have received training provided by suppliers as well as maintenance-related training of each department through the Associated TC Project, ensuring there are no technical issues. Additionally, manuals for each department have been prepared, and daily and periodic inspections are conducted following these manuals. Furthermore, NUBIA has undertaken various activities to improve airport services. The initiatives are implemented based on an analysis of needs derived from customer survey results, including activities such as the renewal of the airport website, the addition of signage, an increase in the number of trolleys, language training for employees, and clean airport campaigns.[35]

In light of the above, the staff involved in the operation and maintenance of the new airport possess the necessary technical capabilities. Maintenance is appropriately carried out in each department according to the manuals. Therefore, there are no issues in terms of the technical aspect.

[Contribution of the Associated TC Project]

Through the Associated TC Project, training was conducted to enhance the maintenance capabilities of the new airport. For example, training was provided on the differences between the asphalt runway of the former airport and the concrete cement runway of the new airport, as well as specific maintenance methods. In addition, in tenant operations, changes have been made from the area-based fee collection method used at the former airport to a revenue-based fee collection method, referencing examples from Japanese airports. Additionally, a POS system has been introduced. Regarding the refueling system, the newly introduced Highland method refueling system is operated and maintained according to plans developed by predecessors and engineers who participated in the Associated TC Project training. Maintenance is carried out annually according to these plans without any issues. Newly assigned staff have also been trained by the same two members, ensuring that the operation and maintenance of the new refueling system are carried out without any issues.[36] With the introduction of the Highland method, tasks that were previously outsourced to private companies due to staff shortages are now handled solely by CAAM personnel.

3.4.4 Financial Aspect

As explained in “3.4.2 Institutional/Organizational Aspect,” the operation and maintenance of

[35] Source: Interview with NUBIA staff and site visits
[36] Source: Interviews with NUBIA and CAAM Staff

the new airport are handled by NUBIA. Although NUBIA's financial information is not disclosed, according to NUBIA staff, the financial situation was challenging in 2021 and 2022 due to the impact of COVID-19 following the opening of the new airport. However, since 2023, both passenger and cargo volumes have been on a recovery trend, and the situation has significantly improved. It should be noted that NUBIA does not receive subsidies from the Mongolian government.[37] Furthermore, as described later in "3.4.7 Status of Operation and Maintenance," the new airport is well-maintained, and facility expansions are carried out as needed. Therefore, there are no financial concerns regarding the operation and maintenance of the new airport.

At the former airport, only landing fees were collected from airlines. However, under private management at the new airport, operations based on the experience of private companies have been implemented, such as charging for ground support services like cargo handling and refueling. On the other hand, unlike the public service-based operation of the former airport, the new airport is operated by private entities and is therefore subject to taxation. CAAM bears the burden of property and real estate taxes. CAAM was not aware of this tax burden in advance, and while NUBIA receives the revenue from the operation of the new airport, CAAM is responsible for paying the taxes, which poses a certain burden on CAAM. Regarding CAAM's budget, a budget plan is formulated each year based on the amounts requested by each department, and any urgently required budget is addressed through budget revisions. However, airport facilities are classified as important special infrastructure, and if the amount is substantial, funds are covered by the government's reserve fund. Therefore, there are no issues in terms of financial aspect.[38]

3.4.5 Environmental and Social Aspect

As explained in "3.3.2.2 Other Positive and Negative Impacts 1) Impacts on the Environment", mitigation measures were implemented for potential negative impacts, and no negative impacts occurred. Furthermore, it has been confirmed by the executing agency that there will be no anticipated negative impacts on the environmental and social aspects at the time of the ex-post evaluation.

3.4.6 Preventative Measures to Risks

At the time of the appraisal, two points were highlighted as key considerations for project implementation and management: "ensuring that the construction delays caused by changes to the Mongolian side's airport access road development plan do not occur," and "the transfer of international and domestic flight operations from the former airport to the new airport." The access road was funded by a loan that the Mongolian government applied for from China in 2015

[37] Source: Interviews with NUBIA staff
[38] Source: Interviews with CAAM staff

and were completed in 2019. Although there was a delay compared to the initial plan, the planning and construction were carried out to align with the actual opening of the airport, and as a result, the access road was completed in time for the opening. Additionally, the international and domestic operations have been transferred from the former airport to the new airport as planned.[39]

3.4.7 Status of Operation and Maintenance

All of the facilities and equipment maintained by the project are in good working order, well-maintained, and well-cleaned. In response to the increase in airport users, the length of two baggage conveyors was extended by about 1.5 times in 2023. Maintenance, including the procurement of consumables and spare parts, is carried out according to plan, and no problems have arisen.

While instances of congestion were observed when multiple large aircraft arrived simultaneously or during overlapping check-in times for several flights, it is not considered problematic compared to airports in other regions. Similar opinions were frequently confirmed in interviews with airport users. According to airport users, it is common in Mongolia for large groups to see off or welcome travelers during international trips. This results in many people, including those seeing off or picking up travelers, contributing to airport congestion.[40]

As mentioned above, all facilities at the new airport are operating without issues, and the maintenance is well-managed. Cleaning is thorough, and maintenance is carried out according to plan. No significant problems have arisen to date, and expansions to accommodate increased demand are being implemented. Therefore, there are no issues of concern in terms of the operation and maintenance status.

No issues have been observed in the policy/system, institutional/organizational, technical, financial, and environmental and social aspects, including the current status of operation and maintenance. Future risks have been well mitigated. Therefore, sustainability of the project effects is very high.

4. Conclusion, Lessons Learned and Recommendations

4.1 Conclusion

The Project was implemented to improve the safety, reliability, and convenience of the capital airport by the construction of a new international airport in the suburbs of Ulaanbaatar, thereby contributing to further economic growth in Mongolia. In connection with the Project, the

[39] Excluding military aircraft and emergency medical evacuations.
[40] Source: Site inspections, interviews with maintenance personnel from each department, and interviews with airport users.

Associated TC Project, was also executed to ensure the smooth operation of the new airport and to strengthen its operation and maintenance systems and capabilities. The Project aligns with Mongolia's development policy and development needs at the time of the appraisal and ex-post evaluation. Although there was no specific cooperation or coordination with the projects or assistance by JICA or other development organizations, the Project was consistent with Japan's aid policy and international framework such as the goals of the SDGs at the time of appraisal. Therefore, its relevance and consistency are high. Due to factors such as the rise in material prices, rapid exchange rate fluctuations, specification changes resulting from higher-than-expected passenger demand forecasts, and the addition of components covered by ODA loans, the Project costs significantly exceeded the plan. Additionally, the Project period also significantly exceeded the plan due to factors such as the addition of facilities, unsuccessful bids, and delays in the opening caused by the impact of the COVID-19 pandemic. Therefore, efficiency of the project is low. At the new airport, effects such as an increase in annual passenger numbers, cargo volume, and the number of aircraft takeoffs and landings, as well as a decrease in the rate of delays and cancellations caused by weather conditions, have been observed. Additionally, while the former airport only permitted takeoffs and landings from one direction due to its location, the new airport allows for takeoffs and landings from both directions. Furthermore, the installation of lighting equipment has contributed to the reduction of delays and cancellations. Accordingly, improvements in reliability, safety, and convenience have been confirmed. The increase in new flight routes and tourists has also contributed to the promotion of economic activities in the country. Therefore, effectiveness and impacts of the project are high. No issues have been observed in the policy/system, institutional/organizational, technical, and financial aspects, including the current status of operation and maintenance. Thus, sustainability is ensured. Therefore, sustainability of the project effects is very high.

In light of the above, this project is evaluated to be satisfactory.

4.2 Recommendations

4.2.1 Recommendations to the Executing Agency

None

4.2.2 Recommendations to JICA

None

4.3 Lessons Learned

<u>The necessity of prior notification regarding the burden after airport relocation</u>

The operation of the new airport has been entrusted to a private company for the first time in Mongolia's airport sector, and it is being managed based on private sector experience. Although

some facilities were not fully operational immediately after the opening due to the impact of COVID-19, they are now fully operational. The operation of the airport, leveraging private sector experience, has also led to reported improvements in services. On the other hand, with the new airport being operated by a private company, the payment of property taxes has become the responsibility of CAAM (since the former airport was operated by the public entity CAAM and was therefore tax-exempt). While the revenue goes to the private sector, the tax payments have become a certain burden for CAAM. In cases like the Project, where the executing agency differs from the operation and maintenance agency, or where the operation and maintenance agency for a new facility differs from that of the previous facility, it can be said that the government and the executing agency should have more thoroughly identified, examined, and specified the roles of each agency, as well as the burdens arising after the transfer, during the planning stage. They should also have notified stakeholders in advance and gained their understanding.

5. Non-Score Criteria

5.1 Performance

5.1.1 Objective Perspective

None

5.2 Additionality

None

(End)

Comparison of the Original and Actual Scope of the Project

Item	Plan	Actual
1. Project Outputs		
1) Runway development		
Runway	3,600 m × 45 m	As planned
Taxiway	4,160 m × 23 m	4,142 m × 23 m
Aprons	101,084 m^2	108,800 m^2
2) Terminal building construction		
Passenger	31,200 m^2	33,300 m^2
Cargo	2,380 m^2	3,689 m^2
(Implemented with Mongolian funding		
3) Construction of airport-related facilities and procurement of equipment	Control tower (including related facilities such as communications), aviation security facilities (radio facilities, aviation lights, etc.), fire and rescue facilities, car parks, access road within the airport, power supply system, heating system, water supply system, sewerage treatment system, solid waste disposal system, fueling system, vehicles (firefighters, ambulance, ground support vehicles), GSE building, GSE equipment, airport maintenance equipment	Modification: Hydrant fueling system Added: Terminal bridge, runway centerline lights, aircraft hangar, heated parking
4) Consulting services	Phase 1: Design and bid support, construction supervision, environmental management support, etc. Phase 1: Design, construction supervision, etc.	As planned
2. Project Period	May 2008-September 2015 (89 months)	May 2008-June 2021 (158 months)
3. Project Cost		
Amount Paid in Foreign Currency	21,802 million yen	65,256 million yen
Amount Paid in Local Currency	12,442 million yen (124,420 million tugrik)	5,640 million yen (7,230 million tugrik)
Total	34,244 million yen	70,896 million yen
ODA Loan Portion	28,807 million yen	65,256 million yen
Exchange Rate	1 tugrik = 0.10 yen (As of October 2007)	1 tugrik = 0.78 yen (Average between May 2008 and June 2021)
4. Final Disbursement	Phase 1: August 2016 Phase 2: October 2021	

(End)