

Vietnam

FY2019 Ex-Post Evaluation of Japanese ODA Loan

“Terminal 2 Construction Project in Noi Bai International Airport (I) (II) (III)”

External Evaluator: Nobuko Shimomura, Luong Huong GIANG, Almec Corporation

0. Summary

This project is intended to respond appropriately to the sharp rise in air passenger demand and enhance convenience and safety by building a second passenger terminal for the use of international passengers at Noi Bai International Airport in Vietnam’s capital, Hanoi, thereby contributing to the promotion of Vietnam’s economic growth and its international competitiveness. At the time of appraisal, the Five-Year Socio-Economic Development Plan (2001–2005) stated the need for investment in modern aviation transport. Constructing a second passenger terminal in the Noi Bai International Airport has been one of the most essential policies to sustain Vietnam’s economic growth. This project complies with the policies and the development needs as the plan to further expand the terminal building at Noi Bai International Airport has been under consideration during ex-post evaluation. It corresponds with the Country Assistance Policy of Japan for Vietnam at the time of appraisal, which considers the promotion of economic growth and international competitiveness as one of the priority areas of assistance. Hence, the relevance of the project is high. The main output complies with the planned level and the project cost was within the plan. Due to the extended preparation period, the overall project period was slightly longer than planned, though the construction period has shortened considerably. The efficiency of the project is fair. The project has contributed to the significant increase in international passengers. Additionally, the Fuel Hydrant System (FHS),¹ which was the first to become operational in Vietnam, contributes to the competitiveness as well as safety at the Noi Bai International Airport. The intended impacts, such as economic growth, increase in Hanoi City tourists, etc., were fully demonstrated. The effectiveness and impacts of the project are high. Its sustainability is also high as there are no significant problems in terms of institutional / organizational, technical, financial aspects, and status. In light of such findings, this project is evaluated to be highly satisfactory.

1. Project Description

1.1 Background

Since Vietnam introduced its doi moi reform policy in 1986, the expansion of exports and foreign investment has been the driving force in moving the nation onto a course of economic growth. To maintain this progress, a transportation network, which appropriately accommodates the swelling demand for transportation and rapid urbanization, must be provided so as to ensure the smooth and safe passage of goods and people.

¹ Aviation Fuel Facility that refuels aircraft directly from the pipe, not by the refueler.



Project Location(s) Noi Bai International Airport Passenger Terminal 2

Regarding passenger transportation volume, road transport has been the most dominant mode (covering 80% to 90% of the total passenger volume), followed by water transport and railway. Air transport used to have the least passenger volume. However, the air transport sector is becoming significantly important owing to the long land with a north-to-south distance of 1,650 km. In 2009, the passenger transportation volume of both railway and air became equivalent to approximately 11 million. On the other hand, passengers-kilometre (km)² in air transport exceeded the railway since 1996 when statistics became available. The growth of passengers-km in air transport was outstanding between 2001 and 2010 as shown in Figure 1. In 2010, the share of passengers-km in air transport was over 20% next to road transport. The demand of air transport has been expanding.

Table 1 Trend of the Transport Passengers-km by Modes

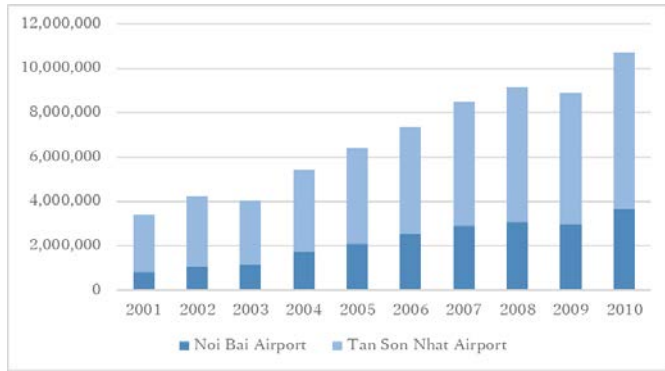
Year	Passenger-km (Million)					Annual Growth Rate					Share by Modes			
	Total	Railway	Road	IWT	Air	Total	Railway	Road	IWT	Air	Railway	Road	IWT	Air
2001	35,624	3,426	23,395	2,693	6,111	10%	7%	5%	7%	39%	10%	66%	8%	17%
2002	39,354	3,697	25,598	2,957	7,101	10%	8%	9%	10%	16%	9%	65%	8%	18%
2003	44,379	4,069	30,459	2,739	7,112	13%	10%	19%	-7%	0%	9%	69%	6%	16%
2004	51,167	4,376	34,266	3,158	9,367	15%	8%	12%	15%	32%	9%	67%	6%	18%
2005	57,696	4,563	38,602	3,407	11,124	13%	4%	13%	8%	19%	8%	67%	6%	19%
2006	63,909	4,334	43,569	3,189	12,817	11%	-5%	13%	-6%	15%	7%	68%	5%	20%
2007	71,865	4,660	49,372	3,151	14,682	12%	8%	13%	-1%	15%	6%	69%	4%	20%
2008	78,180	4,560	54,221	3,246	16,152	9%	-2%	10%	3%	10%	6%	69%	4%	21%
2009	85,203	4,138	61,509	3,048	16,508	9%	-9%	13%	-6%	2%	5%	72%	4%	19%
2010	97,932	4,378	69,197	3,195	21,162	15%	6%	13%	5%	28%	4%	71%	3%	22%

Source: Vietnam General Statistics Office (GSO), IWT: Inland Waterways Transport

Vietnam has 22 civilian airports, but Noi Bai International Airport (NIA), located to the north of the center of the capital Hanoi as the gateway for Vietnam’s northern region, the Da Nang

² Cumulative total of the number of passengers carried (passengers) multiplied by the distance travelled by respective passengers (kilometers).

International Airport in central Vietnam, and Tan Son Nhat International Airport in Ho Chi Minh City account for 89% of Vietnam’s air passengers (in 2007). Moreover, the volume of air passenger transportation at these major airports has risen sharply with an average of 19% annual increase from 2001 to 2010 for NIA and 12% for the same period at Tan Son Nhat International Airport.



Source: Civil Aviation Administration of Vietnam (CAAV)

Figure 1 Trend of the International Passengers of the Two Major International Airports in Vietnam

As shown in Figure 1, the passenger increase at NIA has been drastic. The total number of passengers in both domestic and international was 9.52 million in 2010, which substantially exceeded the airport capacity of 6 million per year. It was urgently required to expand the handling capacity of passengers to meet the rapidly increasing demand as well as to improve efficiency and safety. Furthermore, the World Airport Awards³ ranked NIA lower than 200, based on the limited facilities and poor quality of services compared to the airports in neighboring countries. Reformation and capacity building were confirmed necessary as well, in terms of operation and maintenance.

1.2 Project Outline

This project is intended to respond appropriately to the sharp rise in air passenger demand and enhance convenience and safety by building a second passenger terminal for the use of international passengers at Noi Bai International Airport in Vietnam’s capital, Hanoi, thereby contributing to the promotion of Vietnam’s economic growth and its international competitiveness.

Loan Approved Amount/ Disbursed Amount	59,253 million yen / 55,246 million yen (Total Amount from Phase I to Phase III)
Exchange of Notes Date/ Loan Agreement Signing Date	March 2010 / March 2010 (Phase I) March 2012 / March 2012 (Phase II) December 2013 / December 2013 (Phase III)
Terms and Conditions	Interest Rate 0.2% (Phase I, II) 0.1% (Phase III) 0.01% (consulting services)

³ The World Airport Awards is based on the annual Skytrax (England) Airport customer satisfaction surveys. They are regarded as a quality benchmark for the airport industry, assessing customer service and facilities across over 550 airports. (Reference: Skytrax World Airport Awards. [December 2020]. <https://www.worldairportawards.com/>)

	Repayment Period 40 years: (Grace Period) (10 years) Conditions for Tied (Special Terms for Procurement Economic Partnership (STEP))
Borrower / Executing Agency(ies)	The Government of the Socialist Republic of Vietnam / Airports Corporation of Vietnam (ACV)
Project Completion	December 2014
Target Area	Hanoi City
Main Contractor(s) (Over 1 billion yen)	Taisei Corporation (Japan)/ Vietnam Construction & Import-Export Corporation (Vietnam) Joint Venture
Main Consultant(s) (Over 100 million yen)	Japan Airport Consultants, Inc.
Related Studies (Feasibility Studies, etc.)	<ul style="list-style-type: none"> • Feasibility Study on Terminal 2 (T2) Construction Project in Noi Bai International Airport, 2004, JETRO • Feasibility Study on T2 Construction Project in Noi Bai International Airport, August 2009, NAC (Northern Airport Corporation) • Establishment of the Programs for Operation & Maintenance, Management in Noi Bai International Airport (2010) • Preparatory Study for the Project for Support on Establishment of the Programs for Operation & Maintenance, Management in Noi Bai International Airport (2011)
Related Projects	<p>【ODA Loan】</p> <ul style="list-style-type: none"> • Nhat Tan Bridge (Vietnam-Japan Friendship Bridge) Project (I), (II), (III) (January 2011) • Noi Bai International Airport to Nhat Tan Bridge Connecting Road (I), (II) (March 2010) <p>【Technical assistance related to ODA Loan】</p> <ul style="list-style-type: none"> • Project for Support on Establishment of the Programs for O&M in NIA Technical Cooperation Project (Terminal Management) (Fuel Hydrant System) (2012–2015)

	<ul style="list-style-type: none"> Dispatch of Experts for Supporting the Management of the New Terminal of Noi Bai International Airport (2012–2013)
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2. Outline of the Evaluation Study

2.1 External Evaluator

Nobuko Shimomura / Luong Huong GIANG, Almec Corporation

2.2 Duration of Evaluation Study

The schedule of the ex-post evaluation study is as follows.

Duration of the Study: October 2019–January 2021

Duration of the Field Study: March 1–11, 2020

2.3 Constraints during the Evaluation Study

Due to the impact of the COVID-19, flights were reduced due to travel restrictions and low demand. The work schedule of the ACV staff in charge of the project were consequently affected. In addition, restrictions were imposed on the movement of citizens within Hanoi, which exacerbated the status of the interview survey for the tourism industry to confirm the effectiveness and impact of the project. From the outset, people in tourism reluctantly collaborated with the survey due to the severe impacts caused by the pandemic, thus it had to be conducted much later than planned without doing a face-to-face interview.

Regarding the impact of land acquisition, evaluation was conducted within the scope of available materials as the Hanoi People’s Committee, the authority responsible for the procedure, could not accommodate the request for collaboration due to their full engagement against the COVID-19. The second field survey, which was scheduled to be conducted, was done remotely via online conference.

3. Results of the Evaluation (Overall Rating: A⁴)

3.1 Relevance (Rating: ③⁵)

3.1.1 Consistency with the Development Plan of Vietnam

At the time of appraisal, the Eighth Five-Year Socio-Economic Development Plan (2006-2010) aimed to lose its status as a low-income country by 2010 by expanding the knowledge-based economy that would lay the foundation for high growth, improved living conditions, industrialization and modernization, and achieve political, social and legal stability to bolster its position in international society, all centered on the economy, society and the environment. The plan states the need for investment in modern aviation transport as one of the strategies to upgrade the transportation sector. The Hanoi Transport Master Plan prioritizes with urgency the

⁴ A: Highly satisfactory, B: Satisfactory, C: Partially satisfactory, D: Unsatisfactory

⁵ ③: High, ②: Fair, ①: Low

construction of Terminal 2 (hereafter T2)⁶. The Master Plan for Air Transportation (2020–2030)⁷, as well, stresses the need to upgrade Noi Bai International Airport.

During the ex-post evaluation, the Tenth-Year Socio-Economic Development Plan (2011–2020) states the need for investment in modern aviation transport as one of the strategies in the transport sector. Both the Master Plan of the Air Transportation sector for the period 2020–2030 and Vietnam’s Airport System Development Master Plan for the period 2021–2030 and Vision to 2050 state the necessity of further expansion of the NIA. There is no change in the policy for NIA that further investment is needed based on this project.

3.1.2 Consistency with the Development Needs of Vietnam

The annual passenger volume in NIA has increased drastically owing to the rapid economic growth, reaching 9.5 million in 2010 from 2.2 million in 2001. NIA Terminal 1 already exceeded the capacity in 2007 as its original design can service approximately 6 million passengers per year. Since NIA is the only international gateway in the national capital city of Hanoi, the construction of T2 was one of the most desirable projects for the Government of Viet Nam.

The growth rate of foreign visitors, according to the statistics of Hanoi City, was 11% per year between 2010 and 2015. Such fast business and tourism demand growth progressed the rapid air transportation along with the Vietnamese economic growth, as expected. In effect, the average annual increase of foreigners staying in hotels between 2016 and 2019 was 18%. The construction of the new terminal was in compliance with development needs.

3.1.3 Consistency with Japan’s ODA Policy

At the time of appraisal, Japan’s Country Assistance Program for Vietnam (July 2009) stated that “the promotion of economic growth and strengthening international competitiveness” was one of the four main pillars of Japan’s aid policy. Urban development and the establishment of a transport / traffic and communications network, which includes air transportation, were given priority. Moreover, JICA has responded to this plan by working for urban development and the establishment of transport / traffic and communications network to promote economic growth and strengthen the international competitiveness of Vietnam against four development issues listed in the policy for implementing aid to Vietnam. Aid for traffic / transportation and urban development is positioned as part of the Program to Build Trunk Road Network, and this project is implemented as part of this.

Considering the above, this project has been highly relevant with Vietnam’s development plan, development needs, as well as Japan’s ODA policy. The project’s relevance is high.

⁶ MOT and Transport Engineering Design Inc., Transport Development Master Plan of Hanoi Metropolitan City by 2020, March 2003.

⁷ Decision No.21/QD-TTg (January 8, 2009)

3.2 Efficiency (Rating: ②)

3.2.1 Project Outputs

The main output is to complete the terminal construction for international passengers and auxiliary facilities to meet the demand by 2020 (approximately 15 million air passengers a year). Specifically, the new terminal with a floor space of approximately 138,000 m² includes engineering work of the elevated bridge, roads, parking lot, etc.; airport facilities (baggage processing system, passenger boarding bridge, security systems, etc.); sewage system; and aircraft refueling facility. There were slight changes in the following areas due to the changes from the appraisal period.

- (1) Omission of two CT scanners and the revenue management system (RMS). These were regarded as over-scope because of the limited number of long flights.
- (2) Additional design change and its implementation: the redesign of the Noi Bai International Airport to Nhat Tan Bridge Connecting Road, or the so-called Vo Nguyen Giap Road. Due to the height difference between the road and the original design, the revision was necessary between the Project Management Units of the Connecting Road and T2 without causing a substantial delay in the construction schedule.
- (3) Redesign of the canteen in front of T2 and design of car parking: The change was proposed to improve the design and adjust the demand.

Adding to the changes is a consulting service for drafting the integrated development plan to reflect the drastic increase of passengers and flights. The reasons for those changes were deemed appropriate.



Departure Lobby



Shopping Area



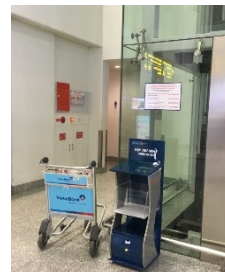
X-Lay Security System



Common Use Terminal Equipment (CUTE)



Flight Information Display



Stand for the Customer Satisfaction Survey Sheet



Electrical Facility



Baggage Handling System



Passenger Boarding Bridge



Arrival Area



Pond besides the Terminal Exit⁸



Parking Area for Airport Users



Cafeteria outside of T2 Building



Aircraft Fuel Hydrant System Facility



Sewerage Treatment Plant

Photo of the T2 Facilities Financed under the Project

3.2.2 Project Inputs

3.2.2.1 Project Cost

The original cost for the Project was 76,132 million JPY (with a loan amount of 59,252 million JPY), and the actual cost is 67,671 million JPY (with a loan of 55,245 million JPY). The actual cost is 89% of the plan. The main reason for the reduction of actual cost was the over-estimated price escalation, which was calculated by taking into account the inflation rate of 12.1% in 2010 (21.2% in 2011 the following year), but in reality, the inflation rate during the construction period settled down to approximately 6.4%, and it did not increase as much as expected⁹.

3.2.2.2 Project Period

The project period exceeded for a month beyond the original period, while the inauguration of facilities was three months prior, as shown in Table 2. Normally, the airport starts operations

⁸ The lotus wall painting received the golden award for the category of social design in the international design competition in Italy (2019).

⁹ Inflation rate was referred to the World Development Indicators 2020, <https://databank.worldbank.org/> (Confirmed December 2020).

after a mastery period of three to four months. This project, however, had to respond to the irregular request of the Vietnamese Government approximately six months prior the project completion, to start operations the day after the completion of the construction to respond to the rapid increase in passenger demand. Establishing a strict schedule, such as construction concurrent with an operational test, the contractor fulfilled the request.¹⁰

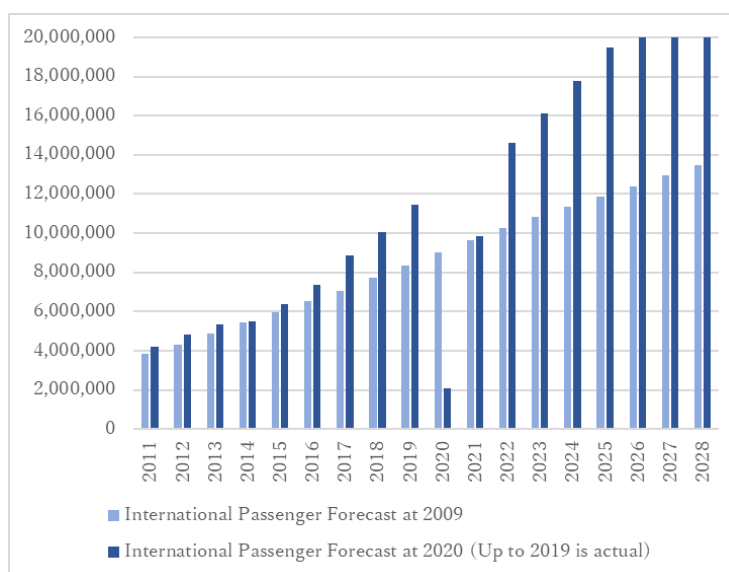
Table 2 Comparison of Planned and Actual Project Implementation Period Major Works

Items	Original Plan	Actual
Total project implementation	March 2010 / November 2016 6 years and 9 months, 81 months	March 2010 / December 2016 6 years and 10 months, 82 months
Detailed Design & Tender Assistance	Sep. 2009–Mar. 2011	Sep. 2009–Nov. 2011
Supervision	Apr. 2011–Jan. 2015	Feb. 2012– Dec 2016
Selection of contractor(s)	Jan. 2010 – Mar. 2011	Apr. 2010– Dec. 2011
Construction Period	Feb. 2012–Dec. 2014	Feb. 2012–Dec. 2014
Inauguration of Facilities	Apr. 2015	Jan. 2015
Defect Liability Period	Dec. 2014–Nov. 2016	Jan. 2015 –Dec. 2016

Source: Documents provided by JICA, and ACV

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

During the conduct of the F/S, the estimated Economic Internal Rate of Return (EIRR) was at 18.5% and Financial Internal Rate of Return (FIRR) at 0.9 %, setting the project life at 40 years. The basis was the conditions of FIRR costs (project cost and Operation and Maintenance: O&M cost) and its benefits (landing fee, passenger boarding bridge (PBB) charge, aircraft parking charge, airport use fee, tenant fee, vehicle



Source: Forecast at 2009: Feasibility Study on T2 Construction Project in Noi Bai International Airport, August 2009, NAC, forecast at 2020 provided by ACV.

Figure 2 International Passenger Forecast of F/S and at the time of Ex-Post Evaluation (2020) for the Noi Bai International Airport

¹⁰ The joint efforts of the implementing agency, tenants, contractors, and supervising consultants that materialized the inauguration the day after the terminal construction were highly appreciated. Consequently, the team was awarded a distinguished service prize—an encouragement special prize—by the Engineering Advancement Association of Japan in 2016.

parking fee, etc.). As for EIRR, the costs excluded taxes and benefits contributed to the tourism industry. ACV calculates the FIRR at 17.6% based on the passenger volume in 2020 as 80% lower than the forecast and setting the project life up to 2030. At the time of ex-post evaluation, the recalculated EIRR was at 36.1% and FIRR at 16.4% based on the project life of 40 years, referring to the actual incomes of the international passenger terminal after more than 5 years of operation and forecast obtained from the ACV. It clearly shows the effectiveness of the tourism industry. The reason for achieving higher FIRR and EIRR values is predominantly because the actual passenger volume is higher than the forecast level at the time of appraisal, as shown in Figure 2.

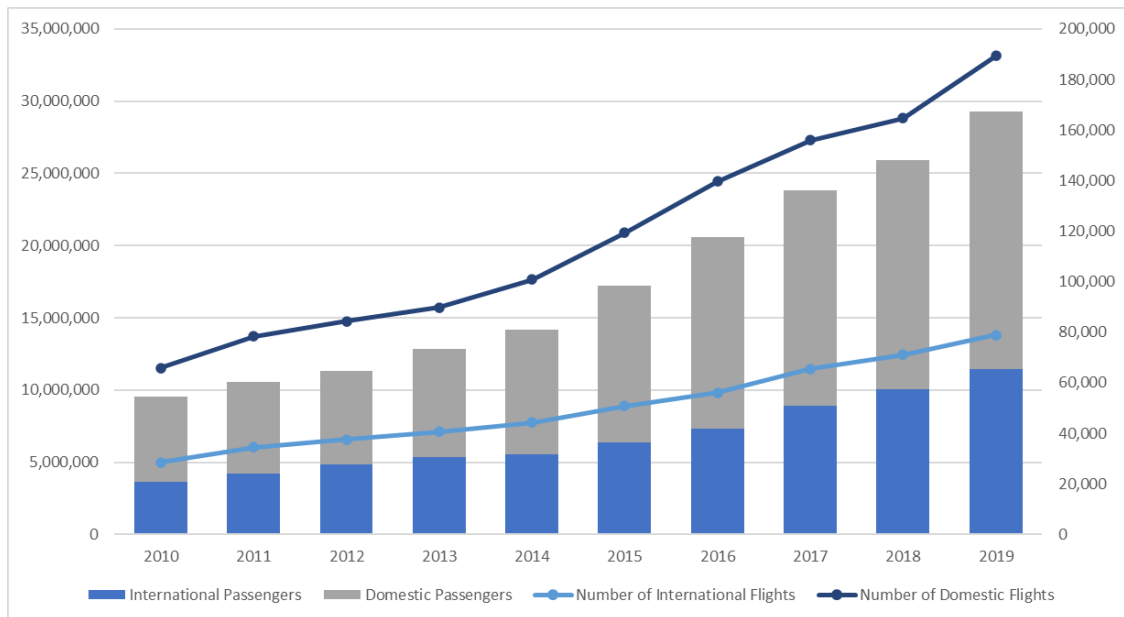
Although the project cost was within the plan, the project period exceeded one month against the plan. The efficiency of the project is fair.

3.3 Effectiveness and Impacts¹¹ (Rating: ③)

3.3.1 Effectiveness

3.3.1.1 Quantitative Effects (Operation and Effect Indicators)

In order to grasp the quantitative effects beside using the annual number of international passengers and annual number of landings and takeoffs for international flights as indicators, the number of domestic flights as well as domestic passengers were set as reference indicators as the existing Terminal 1 becomes the sole domestic airport.



Source: ACV

Note: Terminal 1 (T1: Domestic terminal) built an annex for the Low-Cost Carrier Lobby in 2013, which also influenced the increase of the domestic flights.

Figure 3 Number of International and Domestic Passengers and Flights of the Noi Bai International Airport

¹¹ Sub-rating for Effectiveness is to be put with consideration of Impacts.

Table 3 Number of Flights of the Noi Bai International Airport

	Baseline	Target	Actual		
	2010	2017	2015	2017	2019
	Actual	2 Years After Completion	Completion Year	2 Years After Completion	5 Years After Completion
Annual international passengers	3,675,000	7,700,000	6,389,323	8,886,786	11,445,998
Annual landings and takeoffs for international flights (times)	28,555	58,000	50,823	65,424	79,000
(Reference)					
Annual Domestic passengers	5,866,910	N/A	10,824,392	14,937,614	17,858,633
Annual landings and takeoffs for domestic flights (times)	37,346	N/A	68,526	90,575	110,288

Source: The documents provided by ACV and JICA

The number of the annual tourists was also set as a reference indicator. In addition, the number of visitors was also set as an indicator, but only in terms of the number of visitors booked in hotels in Hanoi because of difficulties confirming tourist data (Figure 4).

As shown in Table 3, the actual figures surpassed the 2-year target after completion. The number of domestic flights (times) as well as domestic passengers increased substantially owing to the expanded space of the T1 that solely services domestic flights, as shown in Figure 3, while the growth of international and domestic passengers from 2010 to 2014 was approximately at 10%. The rate of international airport passengers quickly increased by 15.7% for international and 13.3% for domestic from 2015 to 2019. The number of visitors that stayed in Hanoi increased annually by approximately 10% since 2015, as shown in Figure 4. Foreigners, meanwhile, increased by over 20%, considering tourists as well as business customers.¹² Moreover, the total number of Vietnamese who travelled to foreign countries increased from 60,000 in 2014 to 169,000 in 2019.

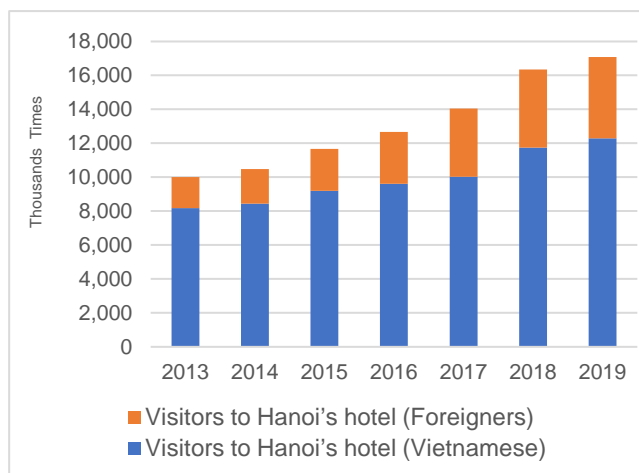
The number of weekly flights increased drastically when the data between 2012 and 2019 were compared, especially for the short distance flights to and from Asian countries. Destinations of long-distance flights were Moscow, Frankfurt, and Paris prior to the construction of T2. Since the operation of the T2, the respective flights were increased, and more destinations, such as London, Sydney, Dubai were added to the long-distance flight service (Table 4).

¹² Approximately 80% of foreign visitors entered Vietnam via air (from the years 2015 to 2019). (Statistical Yearbook of Vietnam, 2019.)

Table 4 Weekly Flights in 2012 and 2019

	2012	2019
Long Distance (Europe, Middle East)	37	44
Short and Middle Distance (Asia, Oceania)	362	601

Source: Documents provided by the JICA expert and ACV



Source: Hanoi Statistics Yearbook 2014, 2019

Figure 4 The Number of Visitors Stayed in the Hotels in Hanoi

3.3.1.2 Qualitative Effects (Other Effects)

(1) Response towards the rapid increase of air transport passengers

The significance of the air transport sector has been the same after 2015 when T2 began operations. The number of passengers as well as passenger-km substantially increased thrice over compared to onset of the Project in 2010 (Table 5). The volume increased approximately 1.6 and 1.5 times, respectively, during the years 2015 and 2018. These substantial changes reflected the fact that NIA increased the number of domestic flights. The project responded to the rapid increase of air transport passengers in Vietnam.

Table 5 Trends of Passengers and Passengers-km by Modes in Vietnam

Year	Passengers (Million)					Passenger-km (Million)				
	Total	Railway	Road	IWT*	Air	Total	Railway	Road	IWT	Air
2009	2,017	11	1,844	151	11	85,203	4,138	61,509	3,048	16,508
2010	2,315	11	2,132	158	14	97,932	4,378	69,197	3,195	21,162
2015	3,311	11	3,105	164	31	154,665	4,150	105,382	3,065	42,068
2016	3,623	10	3,402	173	39	169,077	3,422	114,199	3,220	48,237
2017	4,027	10	3,793	180	45	185,308	3,658	123,494	3,474	54,683
2018	4,456	9	4,207	192	49	207,534	3,512	138,807	3,707	61,509

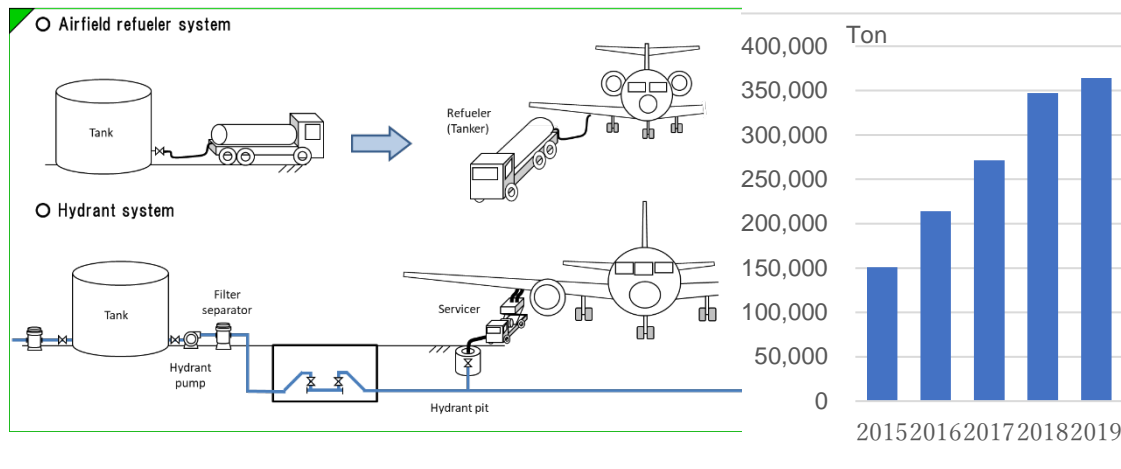
Source: Vietnam General Statistics Office (GSO), IWT: Inland Waterways Transport

(2) Improvement of Convenience as well as Safety

1) Introducing the state-of-the-art fuelling systems

The airfield refueler system used in T1 caused congestion at the apron during the peak flight hours, as fuelling larger aircrafts requires more than one refueler. The FHS

introduced in the project first became operational in Vietnam. The fuel from the newly built storage tanks were transported by underground pipelines, subsequently pumped to the apron area, and directly brought to the aircraft, as shown in Figure 5. Affiliated engineers of the Noi Bai Aviation Fuel Service Company (NAFSC), established by the ACV with a joint investment from petroleum companies, received hands-on training of the state-of-the-art fuelling techniques, such as operation and safety control manuals, monitoring, and supervision system from Japanese experts both in Japan and in Vietnam. Subsequently, T2 satisfies the stringent international standards for aviation fuel control by the Fuel Quality Pool (IFQP) of the International Air Transport Association (IATA), which is the prerequisite for serving long-distance flights at locations worldwide prior to the opening the T2 in December 2014. Since then, T2 never applied the airfield refueler system used in the domestic terminal. The application of FHS reduced the congestion of the apron, time for fuelling aircrafts, and substantially improved safety by avoiding the risk of refueler collision. The volume of fuelling jet oil significantly increased from 151,055 tons in 2015 to 364,285 tons in 2019 (Figure 6). Besides FHS, a leading-edge Japanese photocatalytic technology¹³ was introduced for use in the toilets, etc. that is antibacterial and deodorizing. Additionally, setting more baggage handling systems shortened the time to pick-up checked-in baggage upon arrival.



Source: Ministry of Land, Infrastructure, Transport and Tourism (MLIT), Japan

Figure 5 Aircraft Refuelling Systems

Source: NAFSC

Figure 6 Fuelling Volumes by FHS

2) Improving airport customer satisfaction (CS)

The concept of improving CS was first introduced at an airport in Vietnam by the Narita International Airport (NAA) experts assigned under the technical assistance related to this ODA Loan. Due to the terminal improvements and partly to the consecutive CS

¹³ It is a catalytic substance that reacts when exposed to light and can decompose microorganisms and oxides.

training, the ranking of NIA at the World Airport Awards jumped to 82nd in 2016 from 218th in 2015. In the same year, it topped the World's Most Improved Airport rankings. Since then, NIA has kept its ranking in the 80s range. No other airports in Vietnam have ranked within 100 best airports yet.

(3) Tourism industry Survey

To verify the effectiveness in quality of the project set at the appraisal, (i) response towards the rapid increase of air transport passengers and (ii) improvement of convenience and safety, a survey on the tourism industry was conducted.¹⁴ The respondents¹⁵ assessed the improvements using a five-point scale in five categories, namely terminal facilities, stores / services, airport staff, airport accessibility, and safety. They also described the appreciative aspects as well as problems through free-answer questions.

Table 6 shows the survey results. Appreciating the decreased transport time to the City Center by around 20 minutes, the “Getting to and from the airport, ease of access after the Nhat Than Bridge and Connecting Road construction” assessment received the highest point. The terminal facility assessment comes in second. The facilities and equipment received high assessments since the terminal was relieved of chronic congestion. With a renewed impression of the terminal, which was perceived as old and dark, the airport has become an attractive gateway to Hanoi in promoting the tourism industry. In addition, the airport staff who received CS training were highly-evaluated compared to the immigration officials. Three out of 29 responses in the free-answer questions commented that the airport staff became kind and cheery after the opening of T2.

However, there were also concerns expressed. More local products should be added to the airport shops while also considering quality and variety. Tourist information boards in the arrival area are not comprehensive. There were also some opinions regarding the airport surroundings, such as the often-congested roads in front of the airport since ride-hailing service cars parked at the area around the parking lot and the inconvenience when moving to the domestic terminal. Four respondents also commented that the bus boarding and alighting points were not in strategic locations for passengers and should be improved immediately. Private vehicles and taxis mainly occupy the front of the terminal. Passengers of the two bus lines with high fares board or get off right in front of the terminal, while those from four other bus routes have to walk for 150 to 200 m without roofs. It can be inconvenient when it rains. Based on the traffic survey of NIA in 2015,¹⁶ the number of passengers using buses and minibuses to or from the

¹⁴ The survey method was a questionnaire survey (online and telephone), and the survey period is from August to September 2020.

¹⁵ There are 2,427 tourism-related companies in Hanoi (Hanoi Statistical Yearbook 2019). Referring to a member list from the travel agency association and tourism industry group, the evaluator received referrals, accessed more than 30 companies, and received 29 valid responses.

¹⁶ Transport Engineering Design Inc. (TEDI), Traffic Demand Forecast, Economic and Financial Evaluation and Opportunity for PPP on Line 6 Development.

NIA was at 15,000 per day at the start of operation of T2 in 2015. The inconvenient bus boarding/alighting points will become problematic again when international flights return to be normal. However, the ACV does not have a plan to improve this issue during the ex-post evaluation.

Table 6 The Result of the Questionnaire Survey for the Tourism Industry

Rating		5. Excellent		4. Improved very much		3. Fair		2. Not much Improved		1. Not at all improved		Average points
		No.	Ratio	No.	Ratio	No.	Ratio	No.	Ratio	No.	Ratio	
Assessment Items		No.	Ratio	No.	Ratio	No.	Ratio	No.	Ratio	No.	Ratio	
Terminal Facility	Space, comfort, atmosphere and design	6	20.7%	15	51.7%	6	20.7%	2	6.9%	0	0.0%	3.9
	Cleanliness of floors, seats, and public areas	2	6.9%	19	65.5%	6	20.7%	2	6.9%	0	0.0%	3.7
	Toilets (if well-equipped, and clean)	5	17.2%	15	51.7%	7	24.1%	2	6.9%	0	0.0%	3.8
	Elevators, escalators, moving sidewalk	7	24.1%	13	44.8%	6	20.7%	3	10.3%	0	0.0%	3.8
	Facilities for disabled and passengers needing special care (senior citizens, women with baby, and wheelchairs)	4	13.8%	10	34.5%	9	31.0%	6	20.7%	0	0.0%	3.4
	Check-in facilities and queuing systems	1	3.4%	12	41.4%	9	31.0%	6	20.7%	1	3.4%	3.2
	Wayfinding and terminal signages	4	13.8%	9	31.0%	11	37.9%	4	13.8%	1	3.4%	3.4
	Flight info screens (clarity and quality of information)	5	17.2%	12	41.4%	9	31.0%	2	6.9%	1	3.4%	3.6
	Ease of airport transit (to or from T1)	3	10.3%	5	17.2%	14	48.3%	6	20.7%	1	3.4%	3.1
Convenience of the baggage claim (e.g., display monitor, signages, trolleys, and space)	4	13.8%	13	44.8%	7	24.1%	4	13.8%	1	3.4%	3.5	
Shops/ Services	Availability of services inside and outside the airport (e.g., clinic, spa, cafes, ATM, etc.)	3	10.3%	11	37.9%	11	37.9%	2	6.9%	2	6.9%	3.4
	Shopping availability (e.g., Duty-Free and other stores)	3	10.3%	12	41.4%	6	20.7%	6	20.7%	2	6.9%	3.3
	Cafe and restaurant prices	2	6.9%	2	6.9%	3	10.3%	15	51.7%	7	24.1%	2.2
	Tourism information (in arrival area)	2	6.9%	3	10.3%	15	51.7%	8	27.6%	1	3.4%	2.9
Staff	Immigration and security (communication skills and decorum)	2	6.9%	2	6.9%	9	31.0%	8	27.6%	8	27.6%	2.4
	Airport Staff (friendliness)	3	10.3%	3	10.3%	13	44.8%	6	20.7%	4	13.8%	2.8
Access	Public transport options, conveniences, efficiency, and fare rates	5	17.2%	2	6.9%	16	55.2%	5	17.2%	1	3.4%	2.8
	Taxi availability and fare rates	0	0.0%	4	13.8%	12	41.4%	9	31.0%	4	13.8%	2.6
	Parking facilities	2	6.9%	8	27.6%	12	41.4%	4	13.8%	3	10.3%	3.1
	Getting to and from the airport and ease of access after the Nhat Than Bridge and connecting road construction	15	51.7%	8	27.6%	4	13.8%	2	6.9%	0	0.0%	4.2
Safety	Perception of security and safety standards	4	13.8%	13	44.8%	8	27.6%	3	10.3%	1	3.4%	3.6

Source: Evaluator

3.3.2 Impacts

3.3.2.1 Intended Impacts

(1) Contribution to the Socio-Economic Development of Hanoi

Table 7 illustrates the data on Foreign Direct Investment (FDI) and Gross Regional Domestic Product (GRDP). The FDI number has fluctuated and registered capital has increased substantially. With the improved connectivity to international business centers through the increased number of international flights of NIA, Hanoi City (as well as the surrounding industrial estates) has become more convenient for the investors from overseas.

Table 7 Economic Indicators of Hanoi City

Items	Unit	2010	2011	2012	2013	2014	2015	2016	2017	2018
FDI - licensed projects in Hanoi City	Number	288	285	211	257	313	304	459	556	616
	Registered capital (million USD)	470	1,322	899	487	651	845	1,913	1,434	5,040
	Implemented capital (million USD)	4,270	1,129	900	871	1,017	1,091	1,200	1,012	2,300
GRDP of Hanoi City (at constant 2010 price)	Billion VND	310,703	332,495	355,560	381,598	410,316	442,668	478,964	709,516	760,014
	Annual Growth Rate %		7.00%	6.90%	7.30%	7.50%	7.90%	8.20%	7.30%	7.10%
GDP (National Level)	Annual Growth Rate %	6.40%	6.20%	5.30%	5.40%	6.00%	6.70%	6.20%	6.80%	7.10%

Source: Hanoi Statistics Yearbook 2014–2019

The project also benefited the tourism sector, as shown in Table 8.

Table 8 Indicators Related to the Tourism Industry

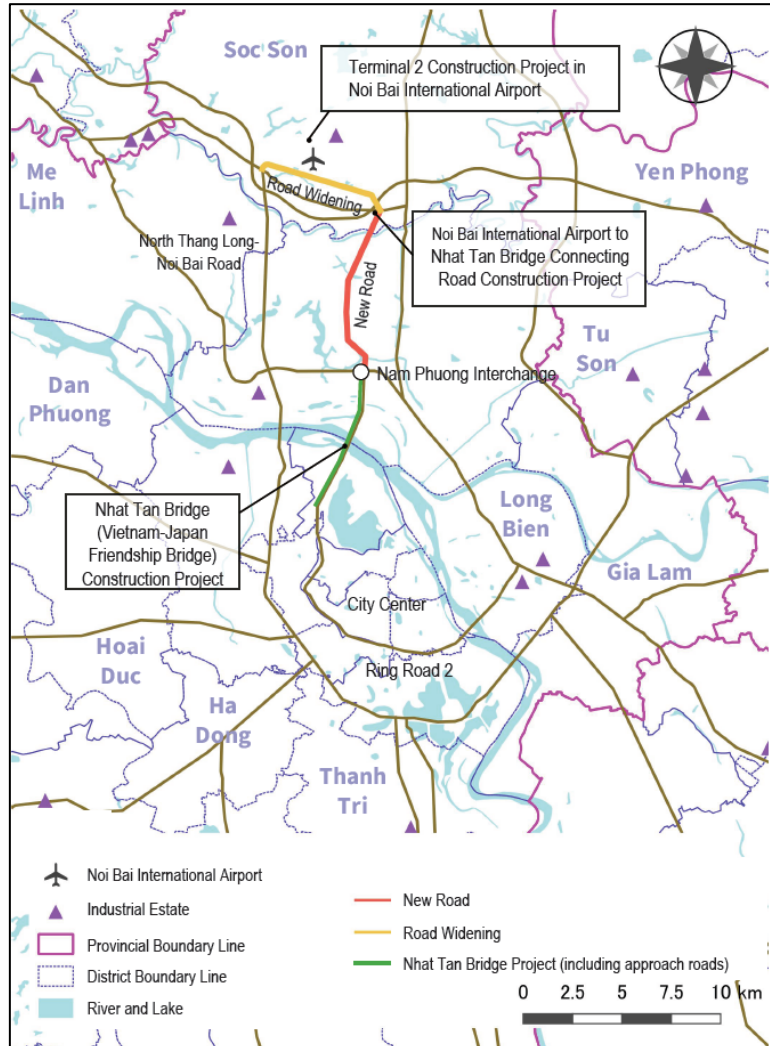
Items / Unit		2010	2015	2016	2017	2018	2019
Number of Hotel and Restaurant	Total	1,123	2,599	2,768	3,078	3,293	3,586
	of which non-state enterprises	1,044	2,513	2,657	2,959	3,121	3,400
	of which FDI	59	67	97	103	155	170
Number of Tourist Services	Total	793	1,807	1,685	1,937	2,123	2,427
	of which non-state enterprises	781	1,790	1,666	1,918	2,101	2,400
	of which FDI	5	9	13	13	15	20
Number of visitors serviced by travel agencies (Thousand persons)		-	745	816	910	940	1,051
Number of Labor in Accommodation and Food Service (persons)	Total	33,468	58,633	60,146	63,334	67,776	72,780
	of which non-state enterprises	20,894	45,300	46,489	49,451	53,234	57,500
	of which FDI	8,766	10,214	11,574	12,024	12,774	13,600
Number of Labor in Tourism Service (persons)	Total	7,134	11,975	11,858	14,404	18,127	19,355
	of which non-state enterprises	6,057	11,251	11,148	13,356	17,200	18,400
	of which FDI	154	219	420	702	695	730

Source: Hanoi Statistics Yearbook 2014,2019, 2020

(2) Improved connectivity

The number of industrial estates discernibly increased in the neighboring areas of Hanoi City, as shown in Figure 7. Roads surrounding the Hanoi Capital Region have improved in recent years, including the access road (Nhat Tan Bridge and Connecting Road [Vo Nguyen Giap Road]) to NIA. Under these circumstances, the number of FDI cases and invested capitals increased considerably and surged the GRDP growth, as shown in Table 7. The location of NIA is convenient for the industrial estates in Vinh Phuc Province where Honda and Toyota have

located their factories as well as for Bac Ninh Province where electronic equipment manufacturers, such as Samsung and LG, have factories. Foreign investors certainly benefitted from the increased flights in T2 and improved connectivity. Together with the Nhat Tan Bridge and the Connecting Road that significantly reduces travel time from the urban districts of Hanoi City, the project contributed to various businesses, even in tourism, as shown in Table 8.



Source: JICA Evaluation Team, based on the existing maps.

Figure 7 Location Map of the Projects with Existing Road Network in Hanoi City

(3) Contribution to the Development of Aviation Sector in Vietnam

The EU-Vietnam Free Trade Agreement (FTA) came into effect in August 2020. The elimination of approximately 99% tariff, after a gradual reduction for ten years, was decided upon that will significantly improve the business environment of European companies in Vietnam in the future. Introducing FHS created a safe and quick refuelling environment for long-haul flights in NIA. Consequently, the demand for long-distance cargo flights is expected to increase. After efforts of introducing CS, the NIA successfully ranked within 100 under the World Airport Awards besides infrastructure and facilities improvement. This also influences

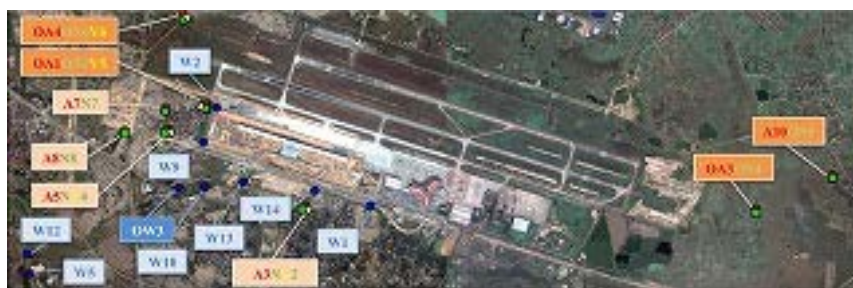
other airports in Vietnam. Long Thanh Airport, which will open in the future, will likely consider introducing more advanced equipment and facilities based on the experience of NIA.

3.3.2.2 Other Positive and Negative Impacts

(1) Impacts on the Natural Environment

The project does not correspond to the large-scale aviation sector specified in the JICA Guidelines for Confirmation of Environmental and Social Considerations (established in April 2002). It also does not have significant harmful effects on the environment nor any attributes specified in the guidelines that would impact or easily affect a region. Therefore, the project corresponds to Category B.

Environmental indicators were monitored during the construction period around the airport construction (shown in Figure 8) for noise, vibration, air quality, and water quality. The noise occasionally exceeded the standard, but it was obvious that it was caused not by the construction, but the traffic generated by airport vehicles and residents around the airport. The monitoring data of environmental indicators after the project completion was not provided¹⁷.



Source: Report on Environmental Monitoring for November 2014 The Contractor Taisei Vinaconex Joint Venture, The Monitoring Service Supplier EPRO Consulting Joint Stock Company

Note: "A" is air quality sampling, "N" is noise measurement and "V" is vibration measurement, "W" is water quality sampling, and "O" is monitoring points.

Figure 8 Monitoring locations for Environmental Impact

(2) Resettlement and Land Acquisition

The project involved the land acquisition of around 101 ha and relocation of 856 graves. Due to COVID-19, the Hanoi City Officials responsible for the survey of land acquisition and determining the target residents could not accommodate the interview request. However, it was confirmed that the procedure complied with the requirement of the Vietnamese Law. ACV provided employment opportunities and continuously supports local events and poor children as part of the consideration for the residents. Having maintained a good relationship with the residents, the ACV has received no complaints since it began its T2 operations

Since the access to NIA from Hanoi City improved because of the Nhat Tan Bridge and the Connecting Roads, access to neighboring areas has become convenient and drawn attention for

¹⁷ ACV provided the monitoring data of environmental indicators after the project in January 2021. However, the evaluator could not confirm the facts due to time constraints.

future development. Since NIA Terminal 3 is also under consideration for the medium to long term, coordinating with related organizations would be important in acquiring surrounding land and zoning measures.

As explained earlier, this project achieved the target indicators such as the number of international passengers and increased demand for domestic flights, which was limited by the capacity of the old terminal (T1). The rate of increase in foreign tourists in Hanoi since 2015 has also been remarkable. Improvement in access to the surrounding industrial parks and real estate around the project area has attracted more visitors and investment, as well as improved business opportunities. The ranking of the World Airport Awards has also improved substantially.

The project has achieved mostly its objectives; therefore, the effectiveness and impacts of the project are high.

3.4 Sustainability (Rating: ③)

3.4.1 Institutional / Organizational Aspects of Operation and Maintenance

Airports Corporation of Vietnam (ACV) officially became a public company (and listed on the stock exchange in 2016) after the merging of Northern Airport Corporation, Middle Airport Corporation, and Southern Airport Corporation. Its organizational chart and number of staff are in Figure 9. It has over 8,000 employees and consists of nine subsidiary companies operating in a wide range of fields. The organizational chart and the number of employees of T2, NIA are shown in Figure 10, and the roles of operation and maintenance are indicated for respective facility, including the department in charge and the name of the subsidiary. The Noi Bai Terminal Operation Center (NTOC) has jurisdiction together with T1. Aviation Technical Services Company (ATSC) oversees the utility services, such as the sewerage treatment plant (STP), electricity, and water. The NAFSC, a joint stock company which ACV capitalizes with over 50%, is responsible for the O&M of FHS. In order to enhance the quality of O&M management, the Japan side proposed the forming of the T2 Start Up and Commissioning Preparatory Committee. Its details are in the Colum.

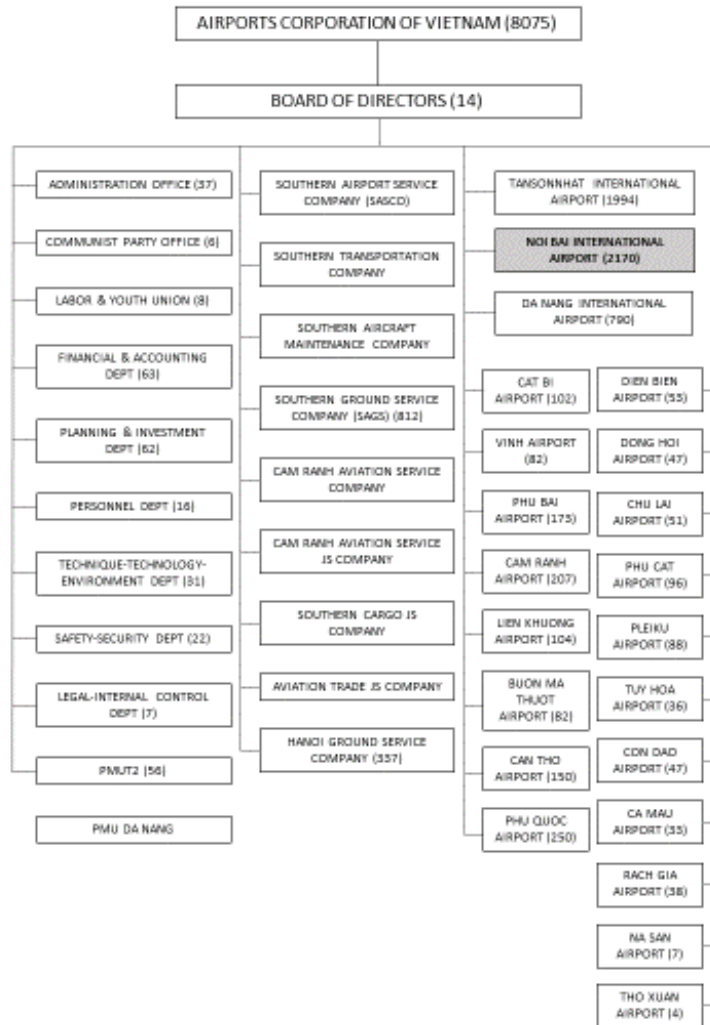
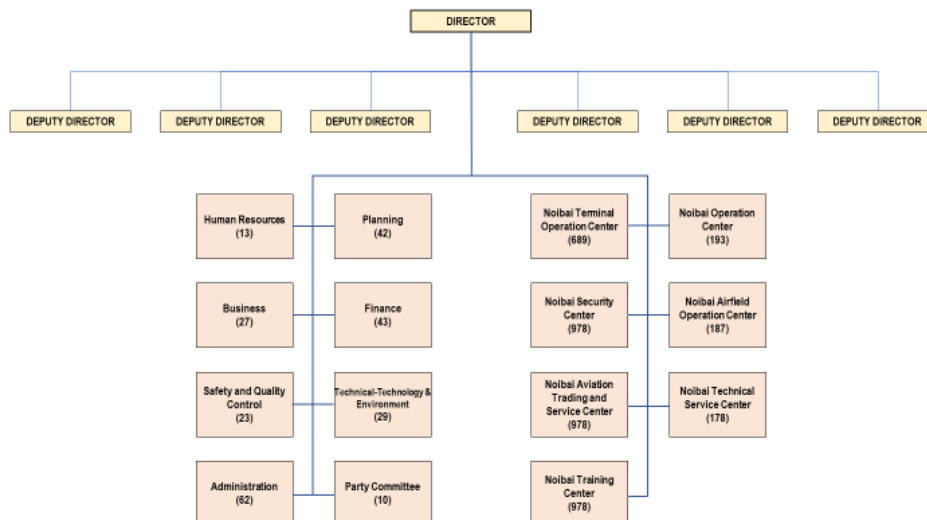


Figure 9 The Organization Chart of the ACV



Source of Figure 9 and Figure 10: ACV

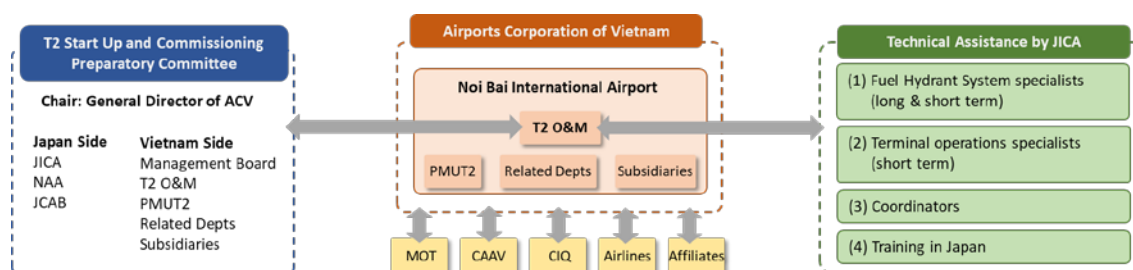
Note: Number inside the brackets is the number of staff as of 2019.

Figure 10 The Organization Chart of the Noi Bai Airport

Colum Institutional Building through the T2 Start Up and Commissioning Preparatory Committee

For ACV to carry out appropriate operations, an intensive institutional building was required such as organization structure arrangement, human resource development, and coordination with related organizations within a limited period. During the Preparation Study for the “Project for Support on Establishment of the Programs for O&M in NIA Technical Cooperation Project” in 2011, experts from the Narita International Airport Corporation (NAA) conducted studies of the existing terminal and drafted the implementation plans encompassing detailed actions—a so-called “To-Do List” that covers about 300 items—and submitted them to ACV. The items include the decision of management concept, mid-term business plan, ~~contract agreement with the airline companies and tenants~~, operation plans and training on the use of equipment, determining airport users fee. Enhancing the effectiveness of these as well as monitoring the progress management in a centralized manner, the T2 Start Up and Commissioning Preparatory Committee, which consists of the stakeholders of both countries, was established based on a mutual agreement.

The committee had seven meetings between April 2012 and June 2013. Under this committee, Japanese and Vietnamese experts formulated and approved action plans to carry out preparations to ensure a smooth commissioning of T2, as shown in Figure 11, referring to the case studies from NAA. The proposed agenda for the training were the extensive experiences and expertise in the technical aspects of the terminal operation and the soft components. The technical aspect of terminal operation includes the IT & communication equipment, special equipment, electrical equipment, mechanical equipment, and the soft components are the expansion of the non-aviation business, CS, security measures, tenant management, etc. (Table 9). These ensured the sustainable operation.



Source: MLIT, Note: CIQ: Customs, Immigration, Quarantine

Figure 11 Noi Bai T2 Project Operation Preparation Framework

Table 9 The Major Technical Trainings Provided by the JICA

Period/ Provider	Contents
2011–2014	On-site training in Japan Training on technical and policy issues by the NAA and Kansai International Airport (KIA)
2012–2013 NAA	Dispatch of Experts for New Terminal Management Support (Short-Term) · Airport management and O&M management for terminal facilities and equipment

	<ul style="list-style-type: none"> • Institutional building for the new terminal facilities • Planning for the sound financial management, proper pricing policies, etc.
2012–2015	Dispatch of an Expert for Aviation Policy and Fuel System (Long-Term by MLIT)
2013–2014 NAA	Project for Support on Establishment of the Programs for O&M in NIA Technical Cooperation Project (Terminal Management) <ul style="list-style-type: none"> • Customer Satisfaction Improvement, Terminal Facility Management • Security Management, Terminal Operation Center • IT/Communication Equipment, Special Equipment/ Electricity, Manufacturing Facility
2014–2015 KIA	Project for Support on Establishment of the Programs for O&M in NIA Technical Cooperation Project (Fuel Hydrant System) <ul style="list-style-type: none"> • Aircraft refuelling facility operation technology, Operational Inspection / Security, Monitoring Control System • Laboratory Quality Management and Electricity / Machinery O&M
Source: Documents provided by the JICA Experts	

3.4.2 Technical Aspects of Operation and Maintenance

Simultaneously with the new T2 construction, an O&M team was established which received comprehensive technical assistance from JICA, and subsequently contributed to the human resource development of ACV. The core staff went to Japan for field training, attended in-country series of training by the dispatched Japanese experts, learned and understood various technical aspects and the O&M procedures, and prepared for the first day of operations of the terminal. When FHS first operated in Vietnam, ACV received support for the after-sales service of the supplier manufacturer. There was no major accident recorded since operations began so far, demonstrating that NIA acquired sufficient technical capabilities.

3.4.3 Financial Aspects of Operation and Maintenance

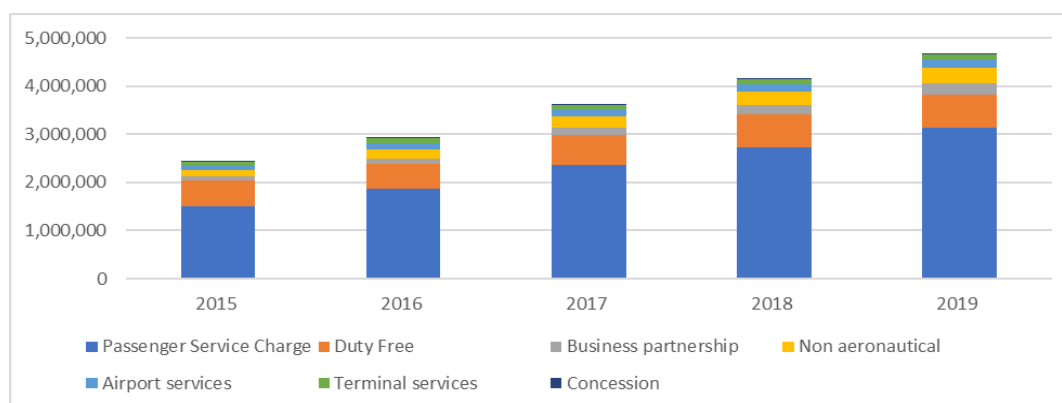
Regarding securing the budget for the future operation and maintenance of ACV, net income has increased in the past four years after T2 became operational, as shown in Table 10. T2 maintenance costs, in particular, were approximately 760 million yen from 2015 to 2019. The overhauling plan is in 10 years. Although, the operation revenue of NIA decreased drastically with the limited operations due to COVID-19. ACV, in fact, plans to start the expansion of T2 as planned. The NAA experts assigned under the Project recommended having a sound financial basis by diversifying and increasing the non-aeronautical revenue sources, such as applying tenant management techniques for higher earnings. The focus was on the extensive increase in revenue from Duty-Free and non-aeronautical sources, more than the rate of increase of passengers, and that materialized as shown in Figure 12.

Table 10 Cashflow of the ACV

Unit: VND million

	2016	2017	2018	2019
Total Revenue	10,690,586	13,830,215	16,123,161	18,328,552
Total Cost of Revenue,	6,590,039	8,182,345	8,295,605	8,994,924
Gross Profit	4,100,547	5,647,870	7,827,556	9,333,628
Total Operating Expenses	6,952,154	8,511,870	8,603,411	8,180,037
Operating Income	3,738,432	5,318,345	7,519,749	10,148,515
Other income/expense	-37,991	25,129	98,426	7,272
Net Income Before Taxes	3,700,441	5,343,474	7,618,176	10,155,787
Provision for Income Taxes	814,724	1,221,754	1,432,822	1,941,631
Net Income After Taxes	2,885,717	4,121,720	6,185,354	8,214,157

Source: ACV Financial Summary Report



Source: ACV

Figure 12 The Revenue Sources of the Noi Bai International Airport T2

3.4.4 Status of Operation and Maintenance

The installed equipment and facilities are being well-maintained, contacting the suppliers when necessary, and are in good condition; thus, no particular difficulties were observed in the O&M of T2.

No major problems have been observed in the institutional / organizational, technical, financial aspects and current status of the operation and maintenance system. Therefore, sustainability of the project effects is high.

4. Conclusion, Lessons Learned and Recommendations

4.1 Conclusion

This project is intended to respond appropriately to the sharp rise in air passenger demand and enhance convenience and safety by building a second passenger terminal for the use of

international passengers at Noi Bai International Airport in Vietnam's capital, Hanoi, thereby contributing to the promotion of Vietnam's economic growth and its international competitiveness. At the time of appraisal, the Five-Year Socio-Economic Development Plan (2001–2005) states the need for investment in modern aviation transport. Constructing a second passenger terminal in the Noi Bai International Airport has been one of the most essential policies to sustain Vietnam's economic growth. This project complies with the policies and the development needs as the plan to further expand the terminal building at Noi Bai International Airport has been under consideration during ex-post evaluation. It corresponds with the Country Assistance policy of Japan for Vietnam, which states "the promotion of economic growth and strengthening international competitiveness." Hence, the relevance of the project is high. The main output complies with the planned level and the project cost was within the plan. Due to the extended preparation period, the overall project period was slightly longer than planned, though the construction period has shortened considerably. The efficiency of the project is fair. The project has contributed to the significant increase in international passengers. Additionally, the Fuel Hydrant System (FHS), which first became operational in Vietnam, contributes to the competitiveness as well as safety of the Noi Bai International Airport. The intended impacts, such as economic growth, increase in Hanoi City tourists, etc., were fully demonstrated. The effectiveness and impacts of the project are high, even its sustainability when there are no significant problems in terms of institutional/organizational, technical, financial aspects, and status. In light of such findings, this project is evaluated to be highly satisfactory.

4.2 Recommendations

4.2.1 Recommendations to the Executing Agency

Improvement of the Transportation Service at the Terminal

Congestion in front of the terminal could not be observed at the time of the ex-post evaluation because of many flight cancellations due to COVID-19. However, the need to reduce congestion was specified in the Questionnaire Survey for the Tourism Industry. The concerns over increased ride-hailing service cars as well as inconvenience of bus passengers were expressed by the tourism-related companies. Police regulations should be strengthened, although they have yet to be introduced. In response to the demand for bus routes, measures such as allocating a space for boarding / alighting points in front of the terminal could possibly be adjusted. It is recommended for ACV to accommodate these improvement measures.

4.2.2 Recommendations to JICA

None

4.3 Lessons Learned

Successful opening of the terminal underpinned by elaborate preparations based on the Commissioning Preparatory Committee.

At the project commencement, Japanese stakeholders advised a strategy to apply CS training and increase non-aeronautical revenues along with the proper operation of equipment and facilities. These boosted competitiveness in terms of finance and convenience and raised the ranking in the World Airport Awards. The multiple outcomes were based on the careful planning of the T2 Start Up and Commissioning Preparatory Committee. It demonstrates the importance of strategic preparation through technical assistance relevant to this project for the sake of further enhancing the outcome of infrastructure development.

In addition, NAA, which played a core role in technical assistance during the project, has been in regular discussions with ACV even after the operation. Subsequently, these companies exchanged memorandums on an inter-airport agreement in 2017. The memorandums focused on strengthening the strategic network, stimulating air-transport demand by promoting tourism, and the technical cooperation in airport operation. Consistent involvement of the Japanese experts led to medium- to long-term business development, which ultimately contributes to the sustainable development of this project.

Impact on simultaneous operation of the three projects

The project was formally inaugurated in January 2015 together with “Nhat Tan Bridge (Vietnam-Japan Friendship Bridge)” and “the NIA to Nhat Tan Bridge Connecting Road,” which significantly improved accessibility. Accessing Hoan Kiem Lake in the city area from NIA used to take 60 to 90 minutes, according to the 2011 data, since traffic congestion used to be persistent when accessing from the Thang Long Bridge to NIA. Using the Nhat Tan Bridge and the Connecting Road significantly reduces travel time to 16–22 minutes. With the rapid increase in aviation demand, the number of vehicles accessing NIA has also rapidly increased. Without the Nhat Tan Bridge and Connecting Road, congestion in Hanoi would have been even obviously worse. It was significant that the three projects were operational concurrently.

Comparison of the Original and Actual Scope of the Project

Item	Plan	Actual
1. Project Outputs		
Terminal facilities	55.4 ha	58.22 ha
Construction Area (ha)	139,200 m ² , 4 floors above ground, 1st basement floor	Same as planned
Civil Works	Viaducts, roads, parking lots, etc.	Partially revised (adjustment for the height of the road to the Connecting Road, and for the number of parking lots in response to the reviewed demand.
Airport Special Facilities	Baggage handling systems, passenger boarding bridge, and security systems	Same as planned except omission of two CT scanners and Revenue Management Systems as per the original scope of project
Sewage Treatment Plant	Capacity 2,600 m ³ /day	Same as planned
Fuel Hydrant Systems	4,000 kl × 4 Tanks Hydrant pits 22 for aircraft stands	Same as planned
Consulting Services	International Experts: 437.9 MM National Experts: 587 MM Supporting Staff: 49 8MM	International Experts: 471.53 MM National Experts: 636.13 MM Supporting Staff: 505.97 MM
2. Project Period	March 2010–December 2016 (81 months)	March 2010–December 2016 (82 months)
3. Project Cost		
Amount Paid in Foreign Currency	JPY 59,252 million	JPY 33,543 million
Amount Paid in Local Currency	JPY 16,880 million (VND 3,513,738 million)	JPY 35,128 million (VND 7,189,319 million)
Total	JPY 76,133 million	JPY 67,671 million
ODA Loan Portion	JPY 59,252 million	JPY 55,246 million
Exchange Rate	VND 1 = JPY 0.004804 (as of March 2010)	VND 1 = JPY 0.004566 (average between March 2010 and December 2016)
4. Final Disbursement	June 2020	