

Arab Republic of Egypt

FY2015 Ex-Post Evaluation of Japanese ODA Loan

“Borg El Arab International Airport Modernization Project”

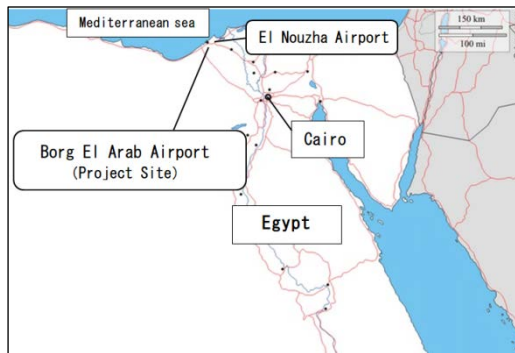
External Evaluator: Kenichi Inazawa, Octavia Japan Co., Ltd.

## 0. Summary

This project constructed and expanded the passenger and cargo terminal buildings and the connected facilities for Borg El Arab Airport near Alexandria, the second largest city in Egypt, in order to respond to increasing demand for air traffic and to improve the quality of services. With regard to relevance, the government of Egypt has indicated its intention to develop infrastructures to cope with an increasing air traffic demand in the *Fifth Five-year Social Development Plan* and the *Strategic Framework for Economic and Social Development*. While it was expected, before the start of this project, that the number of passengers that this airport would be capable of accommodating would increase, further expansion of this airport was planned at the time of the ex-post evaluation. The project is also in line with the assistance policy of the Japanese Government. Thus, relevance is high. As for efficiency, the project cost was slightly higher than the initial plan because the locations of the passenger and cargo terminals, as well as the associated facilities, were reviewed and changed during the detailed design after the start of this project. The project period was also slightly longer than the initial plan due to a change in design of the passenger terminal. Thus, the efficiency is fair. Since the start of this project, as the number of Egyptian workers migrating to gulf countries has been increasing, the numbers of passengers and flights departing from and arriving at the airport have been accordingly more than the initial targets. Considering that both beneficiary survey and interviews confirmed by and large positive impacts on the airport’s services and local economy, effectiveness and impact are high. Additionally, no particular problems were observed in the institutional, technical or financial aspects of the operation and maintenance of this project; thus sustainability of the effects realized through this project is high.

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

## 1. Project Description



Project location<sup>1</sup>



Passenger terminal constructed by this project

### 1.1 Background

In Alexandria<sup>2</sup>, which forms the north western edge of the Nile Delta<sup>3</sup> in the northern Egypt, there are El Nouzha Airport and Borg El Arab Airport. Before the start of this project, the numbers of passengers at both airports had increased by an annual average of 7.3% from 1993 until 2002. There was an increasingly strong demand from the business and industry sector in and around Alexandria and the surrounding area to increase the capacity of the airports so that they could transport goods from nearby airports. However, passenger terminals were old at El Nouzha Airport and its short airstrip could not accommodate large aircraft. Moreover, the airport was surrounded by residential buildings and the area is a swampland under sea level, which makes it structurally difficult to expand. Thus, it was presumed that this airport would not be able to respond to the increasing air traffic demands in the future. Cargo aircraft were not landing at the airport and cargo volume was not significant, either. Thus, there was a need to increase the capacity of the passenger and cargo terminals at Borg El Arab Airport, thereby responding to the increase in domestic and international air traffic demands.

### 1.2 Project Outline

The objective of this project is to respond to increasing demand for air traffic and improve services at Borg El Arab Airport (located in Alexandria, the second largest city of Egypt) by

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<sup>1</sup> Made by external evaluator

<sup>2</sup> The population of Alexandria Governorate is about 4.5 million (2015 data, source: the National Institute of Population and Social Security Research, Central Agency for Public Mobilization and Statistics (hereafter referred to as "CAPMAS").

<sup>3</sup> One of the largest deltas in the world, which is about 240km long in the east-west direction, has fertile soil. The total population of Egypt is about 91.5 million, of which roughly half reside on the delta; thus population concentration is high.

building the passenger and cargo terminal buildings and related facilities, thereby contributing to the economic development of the governorate.

Loan Approved Amount/ Disbursed Amount	5,732 million yen / 5,718 million yen
Exchange of Notes Date/ Loan Agreement Signing Date	March 2005 / March 2005
Terms and Conditions	Interest rate: 1.5% Repayment period: 25 years (grace period: seven years) Procurement condition: General Untied
Borrower / Executing Agency(ies)	The Government of the Arab Republic of Egypt / Egyptian Airports Company (hereafter referred to as “EAC”)
Final Disbursement Date	September 2013
Main Contractor (Over one billion yen)	Besix SA-Orascom Construction Industries Joint Venture (Egypt)
Main Consultant (Over 100 million yen)	Japan Airport Consultants, Inc. (Japan) / Engineering Consultants Group S.A. (ECG) (Egypt)/ Netherlands Airport Consultants B.V. (NACO) (Holland)
Feasibility Studies, etc.	F/S (The Government of Egypt, September 1999)
Related Projects	[ODA Loan Project] “Borg El Arab International Airport Expansion Project” (following project, loan agreement signed in February 2016)

## 2. Outline of the Evaluation Study

### 2.1 External Evaluator

Kenichi Inazawa, Octavia Japan Co., Ltd.

### 2.2 Duration of Evaluation Study

Duration of the Study: September 2015 – October 2016  
Duration of the Field Study: January 2 – January 15, 2016; and  
March 28 – April 1, 2016

### 2.3 Constraints during the Evaluation Study

None.

## 3. Results of the Evaluation (Overall Rating: A<sup>4</sup>)

### 3.1 Relevance (Rating: ③<sup>5</sup>)

#### 3.1.1 Relevance to the Development Plan of Egypt

Before the start of this project, the government of Egypt formulated the *Fifth Five-year Social Development Plan (2002-2007)*, which referred to this project and indicated its direction for developing infrastructure in response to an increasing demand for air traffic. Building on the five-year plan, the Ministry of Civil Aviation (hereafter referred to as “MOCA”) developed a list of airport development projects including improvement of the air control system and aircrafts owned by Egypt Air.

At the time of the ex-post evaluation, the government of Egypt’s ten-year national strategy, with target year 2022, is stipulated in the *Strategic Framework for Economic and Social Development* formulated in November 2011. In this strategy, development of transportation and social infrastructure is listed as one of the goals. Additionally, the executing agency of this project, EAC under MOCA, develops/ revises its *Annual Airport Development Plan* on a yearly basis, thereby promoting rehabilitation and development of airports in the country.

It can be seen from the above that the development and promotion of the aviation sector continue to be viewed as important in Egypt, both at the time of the appraisal as well as at the time of the ex-post evaluation. Therefore, it can be said that this project is consistent with the country’s policy, such as its national and sector plans.

#### 3.1.2 Relevance to the Development Needs of Egypt

Before the start of this project, the number of passengers using the two airports had been growing at an annual average rate of 7.3% between 1993 and 2002. Additionally, there was an increasing demand from the businesses and industries in the governorate and the surrounding

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<sup>4</sup> A: Highly satisfactory, B: Satisfactory, C: Partially satisfactory, D: Unsatisfactory

<sup>5</sup> ③: High, ②: Fair, ①: Low

areas that the airports should be expanded so that they could transport goods domestically and internationally via air from the nearest airports. On the other hand, passenger terminals at El Nouzha Airport were becoming old and its airstrip was too short for large aircraft to land. Moreover, the airport was surrounded by residential buildings the area is a swampland under sea level, which makes it structurally difficult to expand. Thus, it was presumed that this airport would not be able to respond to the increasing air traffic demands in the future. Cargo aircraft were not landing at the airport and cargo volume was not significant, either. Therefore, there was an urgent need to expand the capacity of passenger and cargo terminals at Borg El Arab Airport, thereby responding to the increase in domestic and international air traffic demands.

At the time of the ex-post evaluation, the number of passengers, especially for international flights, is on the increase at Borg El Arab Airport<sup>6</sup>. The majority are Egyptians migrating to the gulf countries for work. In 2014, the number of airport passengers already reached more than 2.3 million; the airport faces a need to assure capacity by further expanding the passenger terminal building. The government of Egypt is anticipating that the number of passengers will continue to increase due to the demand from Low Cost Carriers (hereafter referred to as “LCC”). Thus, a request for a succeeding ODA loan project was forwarded to the Japanese government and its loan agreement was signed in February 2016<sup>7</sup>. It is planned that the new terminal building will be built in the future.

Therefore, it can be judged that this project is consistent with the development needs of the country both at the time of the ex-ante evaluation and at the ex-post evaluation.

### 3.1.3 Relevance to Japan’s ODA Policy

Japan’s Country Assistance Programs for Egypt, formulated by the Japanese Ministry of Foreign Affairs in June 2000, identified the following priority areas: (1) economic / social infrastructure development and promotion of industry; (2) countermeasures against poverty; (3) human resources development, improvement of education; (4) environmental conservation and improvement of the living environment; and (5) promote triangular cooperation (south-south cooperation). Additionally, the Japan International Cooperation Agency (hereafter referred to as “JICA”) developed the Country Cooperation Strategy and Program for Egypt in March 2005, which stated: “As Japan imports crude oil from the Middle East, its stability is crucial. For that, economic infrastructure as well as social supports for the vulnerable and regional development

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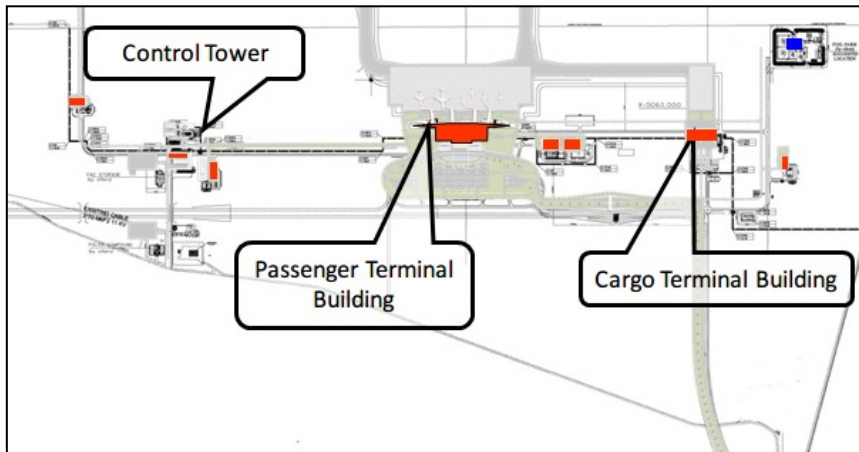
<sup>6</sup> It will be elaborated on in Section 3.3.1 Quantitative Effects (Operation and Effect Indicators) under Effectiveness.

<sup>7</sup> It is expected to be completed after 2020.

are key, because the region faces problems such as a high unemployment rate among the youth and income disparities.”

This project contributes to regional development through building economic and social infrastructures in Egypt and is in line with the development assistance policy of Japan.

Thus, this project has been highly relevant to the development plan and development needs of Egypt, as well as to Japan’s ODA policy. Therefore, its relevance is high.



Source: EAC

Figure 1: Locations of Project Sites



Photo 1: Passenger terminal building

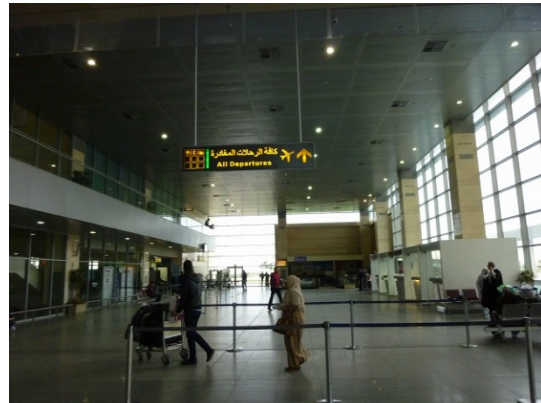


Photo 2: Inside the passenger terminal building

### 3.2 Efficiency (Rating: ②)

#### 3.2.1 Project Outputs

In this project, passenger and cargo terminal buildings were constructed and aprons, taxiways and associated facilities were developed in order to respond to the increasing air traffic

demand at Borg El Arab Airport. Table 1 shows the planned and actual outputs of this project.

Table 1: Planned and Actual Outputs of This Project

Plan at the Time of Appraisal (2005)	Actual at the Time of Ex-Post Evaluation (2016)
1) Construction of passenger terminal building: floor area of 20,840 m <sup>2</sup> , capable of accommodating approx. one million passengers per year	The plan was changed: floor area was increased (to 24,277 m <sup>2</sup> ), capable of accommodating approx. one million passengers per year
2) Construction of Cargo Terminal Building: floor area of 890 m <sup>2</sup> , capable of accommodating approx. 4,000 ton per year	The plan was changed: floor area was increased (to 1,990 m <sup>2</sup> ), capable of handling approx. 10,000 ton per year
3) Development of Apron and Taxiway: 1,494m x 23m	The plan was changed: length of the extension was reduced (923m x 23m)
4) Development of Associated Facilities (roads, parking space, power supply facilities, water and sewage facilities)	As planned, however additional outputs were three passenger boarding bridges and one elevator for transit passengers.
5) Consulting Services (detail design, preparation of tendering documents, assistance for tendering and contracting, construction supervision, environmental monitoring and institutional strengthening)	As planned, however additional outputs were training courses in Japan on “Airport Management Training” and “Detailed Design for the Succeeding Project.” In addition, an airport control tower was constructed in the premises with the fund of the Egyptian side.

Source: Document provided by JICA (the plan at the time of the appraisal) and answers to the questionnaires (actual at the time of the ex-post evaluation)

As shown in Table 1, there are discrepancies between the outputs planned at the time of the appraisal and the actual outputs of this project. Explanations of the discrepancies of each output are as follows:

#### 1) Construction of Passenger Terminal Building

The floor area was increased for the passenger terminal building mainly because of the following reasons: designs and layouts were changed in order to make security inspection of the hand luggage and maintenance works smooth; an inline baggage security system was introduced, in which security inspection of check-in baggage is done after the flight check-in, in order to simplify the process; and there were additional outputs such as large-scale air conditioner, power supply facilities, water and sewage pipes.

## 2) Construction of Cargo Terminal Building

The floor area of the cargo terminal building was increased mainly because it was suggested at the time of detailed design after the start of the project that expanding the cargo handling area would smoothen the process of loading and unloading. As a result of this expansion, the cargo handling capacity also increased from 4,000 ton to 10,000 ton.

## 3) Development of Apron and Taxiway

The extension of the apron and taxiway was reduced in length because what was initially part of this project was excluded as a result of the design review following the discussion with the Ministry of Defense (MOD), which created a minor change in the location.

## 4) Development of Associated Facilities (roads, parking lots, power supply facilities, and water and sewage facilities)

This component was implemented as planned. In order to improve services for passengers, passenger boarding bridges (in three places) and an elevator (one set) for transit passengers were installed as additional outputs.

## 5) Consulting Services

This component was implemented as planned. EAC expressed its interests in sending airport staff to Japan for training related to the airport and “Airport Management Training<sup>8)</sup>” was implemented as an additional output. Additionally, “Detailed Design for the Succeeding Project (Phase II)” was also implemented as an additional output.

### 3.2.2 Project Inputs

#### 3.2.2.1 Project Cost

The total project cost was planned to be 8,575 million yen (of which 5,732 million was to be covered by ODA loan) at the time of the appraisal. The actual cost, excluding that of the additional outputs, was 12,649 million yen (of which 5,718 million was covered by ODA loan), which was higher than planned (148% of the plan)<sup>9)</sup>. The reasons include: construction sites of the passenger and cargo terminal buildings as well as the associated facilities were reviewed at

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<sup>8)</sup> Sixty participants from Borg El Arab Airport participated in the training in Japan, at venues such as Narita Airport. Both basic and advanced courses were given, covering operational aspects like airport management and flight operation as well as maintenance of airport facilities.

<sup>9)</sup> Regarding the additional outputs shown in Table 1, 44 million yen was required for 1) airport management training (approx. 500,000 USD converted at the exchange rate during the project implementation of 1USD = approx. 88JPY); about 183 million yen (approx. 2 million USD converted at the exchange rate during the project implementation of 1USD = approx.91USD) was required for 2) three passenger boarding bridges, one elevator for transit passengers and detailed design for the second phase. The total cost for 1) and 2) was about 227 million yen. Including these additional outputs, the total project cost is about 12,876 million yen. Apart from this, the Egyptian side planned and constructed a control tower, fuel station and airport access roads, etc (outside this project) using its own fund.



the time of detailed design conducted after the start of the project; grounds at some construction sites turned out to have a significant difference in height, thus additional cost was required for the leveling work; and the floor areas for the passenger and cargo terminal buildings were increased.

### 3.2.2.2 Project Period

At the time of the appraisal, the project period was planned to be four years and 10 months (58 months) from March 2005 to December 2009. In reality, the actual project period was five years and seven months (67 months) from March 2005 to September 2010, which was longer than planned (116% of the plan). Table 2 shows the initial plans and actual periods required for each project component. The main reason for the delay in “4) Construction” was the design change for the passenger terminal building, which required additional period. As a result, designs for the associated facilities, such as power supply, water and sewage, also had to be changed.

Table 2: Initial Planned and Actual Project Periods

	Initial Plan (at Appraisal in 2005)	Actual (at Ex-Post Evaluation in 2016)
The Entire Project	March 2005 – December 2009 (58 months)	March 2005 – September 2010 (67 months)
1) Selection of Consultants	March 2005 – January 2006	May 2005 – November 2005
2) Design and Qualification Screening	February 2006 – February 2007	December 2005 – November 2006
3) Tendering Process	March 2007 – February 2008	December 2006 – August 2007
4) Construction	March 2008 – December 2009	September 2007 – September 2010
[Additional Outputs <sup>10</sup> ]		
1) Airport Management Training	May 2009 – December 2013	
2) Additional Construction and Design works for Phase II	October 2012 – July 2013	

Source: JICA document, answers to the questionnaires

<sup>10</sup> In this evaluation study, additional outputs that were not planned at the time of the appraisal were not taken into account for the evaluation of efficiency.

This project constructed passenger and cargo terminal buildings, an apron, taxiway and associated facilities in order to respond to the increasing air traffic demand. At the time of the detailed design, which was conducted after the start of the project, locations for the passenger and cargo terminals as well as other facilities were reviewed. As a result, the project cost exceeded the initial plan. The project period was also longer than the plan because the designs of the passenger terminal building took time. Considering that the airport is handling more passengers than initially expected, which will be elaborated on in Section 3.3.1 Quantitative Effects under Effectiveness, it is fair to say that the increase in the inputs (i.e., project cost and period) were in accordance with the increase in the project outputs.

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

#### Financial Internal Rate of Return (FIRR)

FIRR was recalculated using the same conditions assumed at the time of the appraisal, by taking the landing fees, parking fees, airport usage fees and rental revenues as benefits, with the expenses required for this project (project cost) and maintenance expenses as costs, with a project life of 20 years. The result is 2.09%, which increased from the FIRR 0.5% at the time of the appraisal. The reasons include: though the project cost was higher than the initial estimate, the number of domestic and international passengers has dramatically increased (the initial estimate of approx. 1.000 million → approx. 2.495 million in 2014), and airport usage fee per head increased between 2014 and 2015 (about 1.5 times higher than the previous year).

#### Economic Internal Rate of Return (EIRR)

EIRR was recalculated using the same conditions assumed at the time of the appraisal, by taking reduction in travel time, economic effects associated with the increase in the numbers of passengers and cargos, departures and arrivals, and contributions to the tourism industry as benefits, the expenses required for this project (project cost) and maintenance expenses as costs, with the project life of 20 years<sup>11</sup>. The result is 3.12%, which is lower than the rate assumed at the time of appraisal, 16.9%. One reason is because of the increase in project cost. In addition, it was estimated that large benefits would be attained by contribution to the tourism industry. However, the economic downturn following the Egyptian revolution in 2011 hit the tourism industry hard and did not yield the benefits taken into account in the EIRR calculation at the time of appraisal.

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<sup>11</sup> The expenses are exclusive of tax.

Both the project cost and project period exceeded the plan. Therefore, the efficiency of the project is fair.

### 3.3 Effectiveness<sup>12</sup> (Rating: ③)

#### 3.3.1 Quantitative Effects (Operation and Effect Indicators)

This project constructed passenger and cargo terminal buildings, an apron, taxiway and associated facilities in order to respond to the increasing air traffic demand in the Alexandria Governorate and to improve services. Table 3 shows the baselines, targets and actuals indicating the quantitative effects.

Table 3: Data on Quantitative Effects of This Project  
(Figures in brackets are that of El Nouzha Airport at the time of Ex-Post Evaluation.)

Indicator	At Appraisal		At Ex-Post Evaluation <sup>13</sup>				
	2002	2014 (Five Years After Comple tion)	2005	2010	2012	2013	2014
	Baseline Note*	Target	Year of L/A Signing	Year of Comple tion	Two Years After Comple tion	Three Years After Comple tion	Four Years After Comple tion
1) No. of International Passengers (thousand/yr)	350	840	233 [689]	707 [887]	1,833 [0]	2,118 [0]	2,358 [0]
2) No. of Domestic Passengers (thousand/yr)	90	150	0.6 [40]	3 [85]	127 [44]	133 [36]	137 [25]
3) Cargo Volume (thousand ton/yr)	2	4	N/A [N/A]	5.4 [0]	2.3 [0]	4.9 [0]	6.6 [0]
4) International departures and arrivals (thousand/yr)	4	8	2.3 [6.8]	6.7 [8.6]	17.9 [0]	20.6 [0]	21.0 [0]

<sup>12</sup> The sub-rating for effectiveness is to be put with the consideration of impact.

<sup>13</sup> Date for 2011 could not be obtained.

5) Domestic departures and arrivals (thousand/yr)	2	1 Note**	0.057 [1.5]	0.13 [1.8]	2.9 [7.3]	2.6 [6.6]	3.1 [5.0]
6) No. of Foreign Guests Who Stay Overnight (thousand/yr)	150	360	No of Hotels (Upper) / No of Rooms (Lower) Note***				
			N/A	80	45	45	45
			N/A	7,590	4,252	4,282	4,282

Source: Document provided by JICA (at the time of the appraisal), answers to the questionnaires, and the Ministry of Tourism of Egypt (at the time of the ex-post evaluation).

Note\*: The baselines are the sums of Borg El Arab Airport and El Nouzha Airport (however, the cargo volume shows only that of El Nouzha Airport).

Note\*\*: It was aimed for domestic departures and arrivals to reduce from 2 to 1 thousand. This is because the number of passengers per aircraft was expected to increase as a result of the introduction of large aircraft.

Note\*\*\*: Although the actuals for “6) No of Foreign Guests Who Stay Overnight” could not be obtained, the total number of hotels and rooms existing in Alexandria could be obtained.

Following are major points about each indicator:

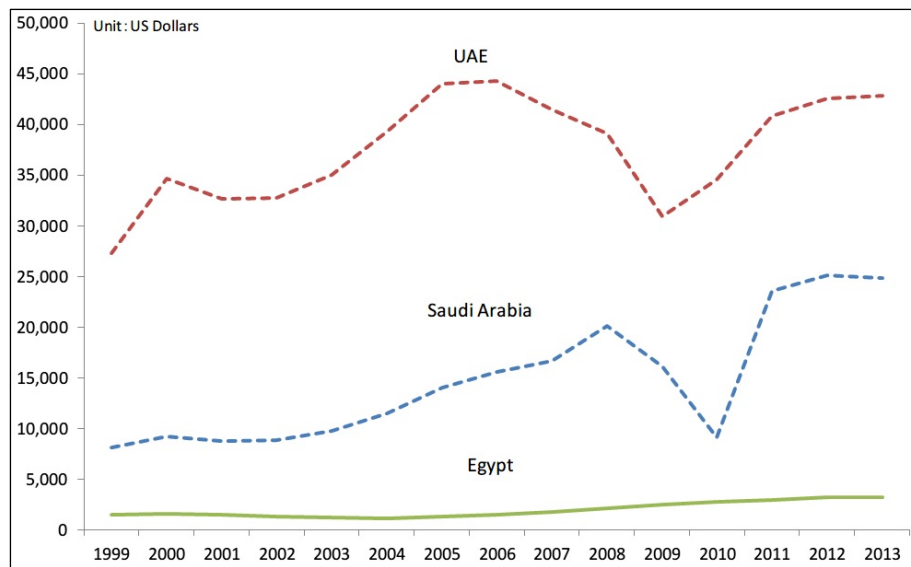
1) The number of international passengers significantly increased to 2,358 thousand per year in 2014 (four years after the project completion)<sup>14</sup> as compared to the target of 840 thousand, five years after the project completion. This is because Egyptian workers migrating to neighboring countries using Borg El Arab Airport (approx. 80-90%) and religion-related travelers associated with Hajj and Umrah<sup>15</sup> pilgrimage and Ramadan (approx. 5-10%) have been increasing<sup>16</sup>. Behind that is (1) an increase in crude oil price, which accelerated the economic growth of the gulf countries after the start of this project. Figure 2 shows the changes in nominal GDP per capita of the two main countries in the Arabian Peninsula (Saudi Arabia and UAE) and Egypt. GDP per capita of the two countries has been higher than that of Egypt since a few years before the start of this project. There is possibility of existing background reason and factor why Egyptian workers tend to migrate to the two countries for better incomes. Another reason is that (2) LCC, which has been increasing its market share since 2008, began flying into this airport. At this airport, it is assumed that an increasing number of people are travelling from the Alexandria Governorate and surrounding areas to the gulf countries using LCC, which offers lower fares. Alexandria is economically the second largest city in Egypt and one of the main industrial cities. Geographically speaking, it is an important spot in the delta, located at the Nile

<sup>14</sup> 2014 was the most recent year for which data was available for all indicators.

<sup>15</sup> Hajj is an Islamic pilgrimage and is one of the five pillars of Islam. It is one of the five major duties of Muslims. One must carry it out at least once in his/her lifetime. Umrah is also an Islamic pilgrimage however can be carried out any time during the year (there is no designated month for the pilgrimage). Destinations are either Mecca or Medina and the majority will head to Jeddah, being an air stop, by air.

<sup>16</sup> The evidence of proportions of the Egyptian migrant workers and the religious travelers were obtained during the interviews with EAC.

River estuary. Additionally, it is thought as one of the reasons that residents in the delta (passengers) who used to fly from El Nouzha Airport and Cairo Airport before the completion of this project began using Borg El Arab Airport, which is easier for them to access. In other words, the airport is strategically located. Furthermore, it is also thought that the Egyptian economy stagnated due to the Egyptian revolution in 2011 and more workers now use this airport to go out of the country to earn foreign currency. In light of the above, this airport is judged to be responding sufficiently to the air traffic demand of the area. As the number of international passengers increased, “4) No. of International Departures and Arrivals” exceeded the initial targets. At El Nouzha Airport, stopped operating international flights in 2011; international flights became concentrated at Borg El Arab Airport. Thus, no international passengers are observed at El Nouzha Airport at the time of the ex-post evaluation.



Source: IMF

(Reference) Figure 2: Changes in Nominal GDP per capita of UAE, Saudi Arabia and Egypt (Before the start of the project – Completion of the project)

The actual figure for “2) No. of Domestic Passengers” is quite close to the initial target. On the other hand, although “5) Domestic Departures and Arrivals” was aimed to be reduced from 2 to 1 thousand at the time of the appraisal, in reality it increased. This is because LCC and inter-regional flights became popular for domestic flights and started arriving at this airport, for which small or medium-sized<sup>17</sup> aircraft are mainly used, despite the fact that the number of passengers per aircraft was expected to increase with the introduction of large aircrafts.

Although “3) Cargo Volume” decreased due to the influence of the Egyptian revolution

<sup>17</sup> They refer to aircrafts that cannot transport a large number of passengers at once.

(2011) after the completion of project, it has been increasing recently and is judged in line with what was initially expected.

Data on “6) No. of Foreign Guests Who Stay Overnight” could not be obtained. On the other hand, the overall number of hotels and hotel rooms in the Alexandria Governorate could be obtained. The impacts of the Egyptian revolution and the deteriorated security situation in the aftermath are thought to have affected the tourism industry. As a result, the number of hotels and hotel rooms are either stagnating or decreasing. Thus, the same is presumed for the number of foreigners who stay overnight. It can be said that the contribution of this project to the tourism industry is not as significant as what was initially expected.

Concluding from the above, the increase in the number of passengers is prominent at Borg El Arab Airport because it is strategically located and caters to the economy of Alexandria and the Nile River estuary in the delta. Although it is thought that the number of international tourists has been declining due to the political instability and the changes in the security situations, increase in the number of passengers and flights based on the Egyptians who use this airport to migrate for work is confirmed to exceed that decline. At the time of the ex-post evaluation, LCC are intermittently requesting to start services on new routes. According to the management of Borg El Arab Airport, new requests are not being accepted at the time of the ex-post evaluation because the existing facilities will not be able to accommodate them. This airport is clearly needed by those who use LCC with lower fares. Thus, the effect of this project is judged to be significant.



Photo 3: In front of the check-in counter



Photo 4: Cargo terminal building built by this project

### 3.3.2 Qualitative Effects

#### 1) Improvement of Convenience and Comfortableness at Borg El Arab Airport

In this evaluation study, Borg El Arab Airport users and local companies, including the tourism industry, were interviewed for a survey using questionnaires. In total, 100 samples (valid responses) were collected, of which 70 were from airport users<sup>18</sup>. Thirty samples were drawn from (1) local companies that have been using Borg El Arab Airport since before the completion of this project<sup>19</sup>; 18 samples from (2) passengers (airport users) who have been using the airport since before the completion of this project<sup>20</sup> and 52 samples from (3) passengers (airport users) who began using the airport after the completion of this project<sup>21</sup>.

As shown in Figure 3, the level of satisfaction with this project is high among all categories, (1), (2) and (3). Figure 4 is in relation to convenience (targeting (1) and (2)) and many responded that it has “largely improved”. Many people pointed out that check-in and hand-luggage inspection take less time now and that it has become easier to find routes to boarding gates. Some also mentioned that facilities are now easier to use and more comfortable, with more restaurants and shops. Compared to before the completion of this project, process through boarding has improved and airport users can now use the facilities more comfortably. Figure 5 is about punctuality of flight departures and arrivals (targeting (1) and (2)). More people answered “Yes”, thus it can be presumed that the airport management is being improved. Figure 6 is in relation to airport services (targeting (1) and (2)); more people said it has “largely improved”, thus it can be considered that airport staff are providing better services as compared to before the completion of this project. Figure 7 is regarding frequency of travel (targeting (2) and (3)). While most people answered their travel frequency has “increased”, many of the category (3) respondents said that it has “not increased”. This is presumably because passengers who used to use El Nouzha Airport or Cairo Airport simply have switched to Borg El Arab Airport and their frequency of travel remains unchanged. Therefore, it can be judged that this

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<sup>18</sup> Airport users polled were the ones who were at the airport on the date of the questionnaire-based interviews. Local companies were visited for the questionnaire-based interviews. In total, 100 people were purposively sampled. Since there were many male airport users and those working at local companies, the sampling target naturally became larger for male. (In regard to the passengers waiting for their flights at departure and arrival lobby areas, samples were drawn without considering gender proportion.)

<sup>19</sup> The respondents were: (1) sex: 81% male, 19% female; (2) age: 17% in their 20s, 52% in their 30s, 17% in their 40s, 14% in their 50s; (3) occupation (industry): 40% tourism, 7% taxis, 3% restaurants, 3% real estates, 3% hotels, 7% banking, 13% aviation, 3% IT, 21% others.

<sup>20</sup> The respondents were: (1) sex: 72% male, 22% female, 6% no indication; (2) age: 11% in their 20s, 39% in their 30s, 22% in their 40s, 11% in their 50s, 11% in their 60s, 6% no indication; (3) occupation (industry): 44% self-owned business; 39% private company employees, 9% unemployed, and 8% others.

<sup>21</sup> The respondents were: (1) sex: 80% male, 10% female, 10% no indication; (2) age: 4% in their 20s, 44% in their 30s, 42% in their 40s, 4% in their 50s, 2% in their 60s, 4% no indication; (3) occupation (industry): 75% private company employees, 10% self-owned business, 15% others and unemployed. During the beneficiary survey, it was attempted to collect more samples from the passengers who have been using the airport since before the completion of this project however this was not successful (in other words, it is likely that more users have started using the airport after the completion of this project). Thus, the sample composition became 18 against 52.

project is indirectly contributing to the improvement of the airport operation, services and comfortability.

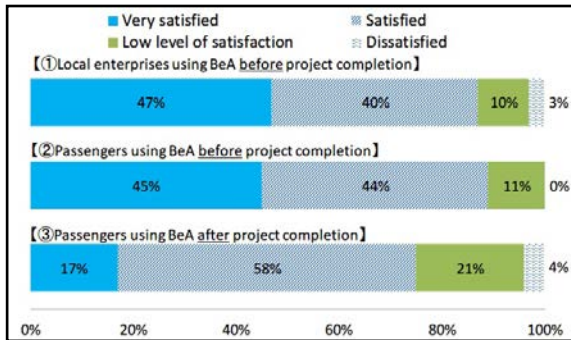


Figure 3: Are you satisfied with this project?

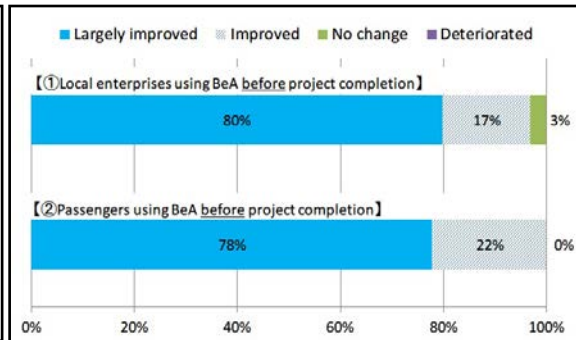


Figure 4: Do you think that the convenience of Borg El Arab Airport improved from before the completion of this project?

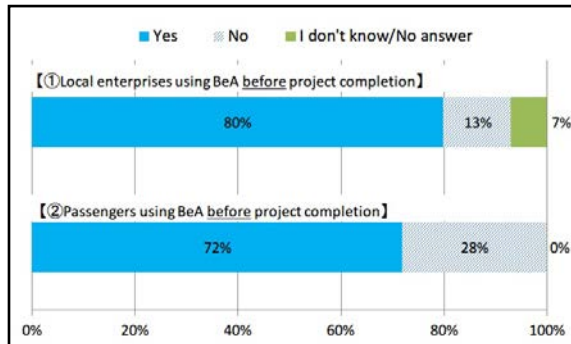


Figure 5: Do you think flight departures and arrivals are more punctual than before the completion of this project?

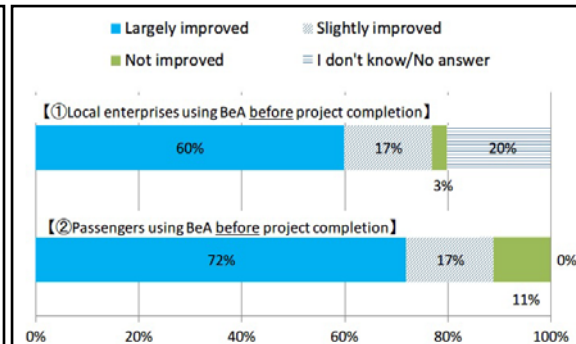


Figure 6: Do you think airport services are better than before the completion of this project?

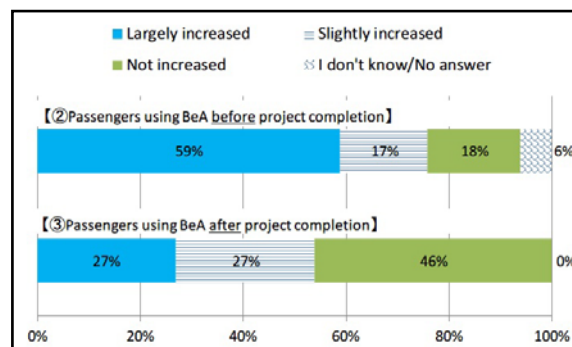


Figure 7: Do you think you travel more often than before the completion of this project?



## 2) Improvement in Airport Management

Operation and maintenance staff of Borg El Arab Airport commented in the interviews: “After the completion of the passenger terminal building, passengers became able to proceed from check-in to boarding smoothly. The facilities in the cargo terminal building are easy to use and loading/unloading is carried out smoothly without delays.” On the other hand, some commented, “The number of passengers has been increasing every year. Given the scale of the passenger terminal building developed by this project, congestion is becoming a problem for certain hours. We often observe long queues in front of check-in counters. As there are only two lanes for the baggage claim, it gets congested when many flights arrive at similar timings.” The management of the airport and EAC headquarters commented in the interviews: “Many domestic and international airlines have been requesting to launch new domestic and international routes using this airport. While we welcome the great demand for air traffic, considering the capacity of the existing facilities, we will not be able to accommodate increasing number of passengers. Thus we are not giving approvals to any requests thus far. As per the International Air Transport Association (IATA<sup>22</sup>) regulations, we are reviewing arrival and departure times, such as trying to shift daytime flights to nighttime. In addition, we are increasing the number of airport staff every year, thereby improving airport management. On the other hand, we are really waiting for the expansion of the passenger terminal building (the succeeding project), which will be a fundamental solution to the issue.” During the site visits conducted as part of the field study, congestion was observed during some hours (particularly in the morning) when flight arrivals and departures were concentrated. On the other hand, it was also observed that the airport management was appropriate in handling commercial and cargo flights.

With regard to “Airport Management Training”, described in Section 3.2.1 Project Outputs under Efficiency, training participants were interviewed during the evaluation study<sup>23</sup>. They commented, “We utilize what we learned from the training in our day-to-day work. For example, we are using the knowledge in providing good customer service, operating airport facilities and managing various facilities.” While it is observed that training provided under this project is contributing to the operation and maintenance of the airport to a certain degree, the number of passengers is on the increase. Thus, it is judged that efforts should continue to further improve the airport services in the future.

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<sup>22</sup> Airlines and travel agents are the main members of the organization.

<sup>23</sup> The airport employees interviewed include a manager of flight operation, a supervisor of the maintenance department and a manager of the customer service department.

As shown in Photo 6, it was witnessed during the field study that loads of baggage were left on the floor near the baggage claim area inside the airport. The main problem is the drastic increase in the number of passengers after the completion of the project, however according to the airport, most of the luggage was either forgotten or abandoned by passengers<sup>24</sup>. According to the management of the airport, there is a penalty for those who leave their luggage for more than three days. Apart from this, it is considered that taking measures to remind passengers of their belongings upon arrival is also worthwhile.



Photo 5: Boarding hall inside the passenger terminal building



Photo 6: Baggage left near the baggage claim area

### 3.4 Impacts

#### 3.4.1 Intended Impacts

##### 3.4.1.1 Contribution to Local Economy and Social Development

###### 1) Qualitative Effects

Targeting the same categories of people as the beneficiary survey described in Section 3.3.2 Qualitative Effects, an interview survey was conducted on tourism development and improvement in functions as an international airport and development of local economy<sup>25</sup>. Figures 9-11 summarize the results.

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<sup>24</sup> There is a designated store room near the baggage claim, however it is constantly full as luggage is left behind on a daily basis. Left-behind baggage includes suitcases, souvenirs and holy water purchased during pilgrimage.

<sup>25</sup> The characteristics of the respondents are the same as those for the beneficiary survey described in Section 3.3.2 Qualitative Effects.

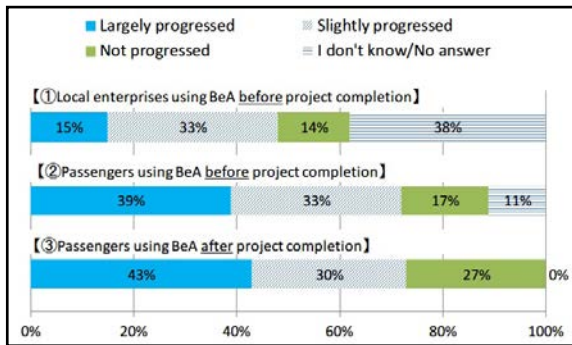


Figure 8: Do you think the tourism of Alexandria has progressed as compared to before the completion of this project?

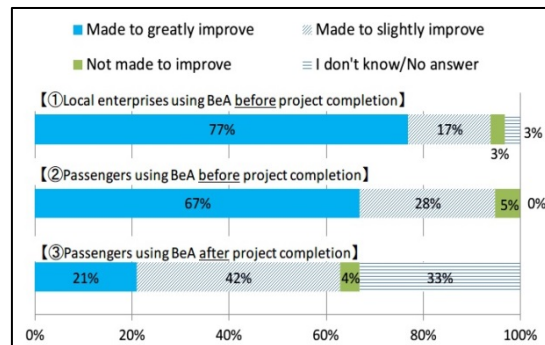


Figure 9: Do you think that Borg El Arab Airport is functioning as an international airport better than before the project's completion?

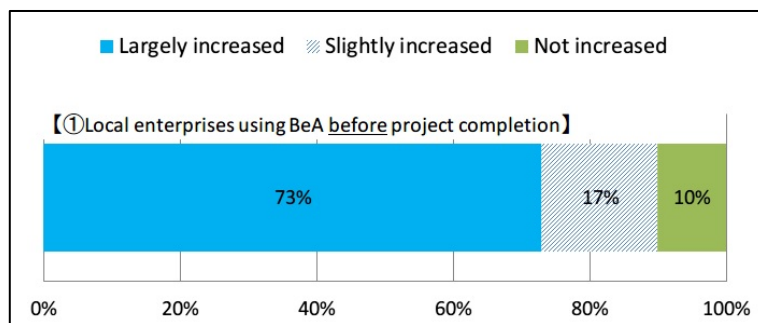
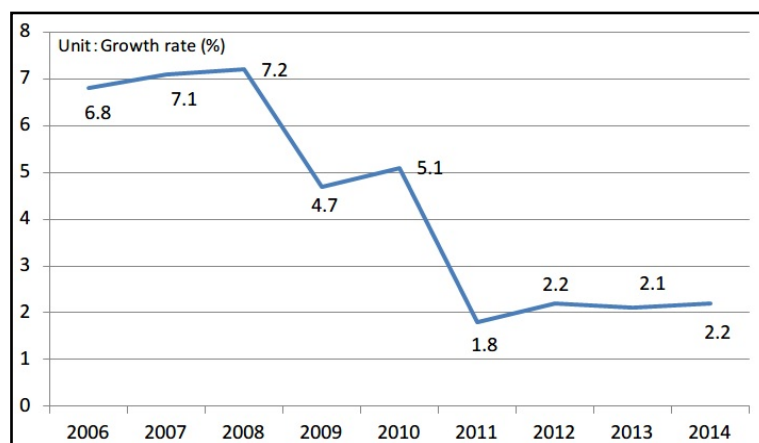


Figure 10: Do you think there are more business opportunities than before the completion of this project?

Concerning the tourism of Alexandria shown in Figure 8 (targeting (1), (2) and (3)), the majority answered that it has “progressed”. On the other hand, answers such as “not progressed” or “I don’t know/No answer” are not small. When the respondents were further interviewed, they referred to the Egyptian revolution in 2011 and the economic downturn. Regarding the question on better functions as an international airport shown in Figure 9 (targeting (1), (2) and (3)), many of category (3) chose “I don’t know/No answer” while many of the categories (1) and (2) said that it has “greatly improved” or “improved”. Follow-up interviews revealed that they think that “the numbers of international flights and destinations are increasing.” With more departure/arrival flights and passengers, including those of LCC, it can also be confirmed that the airport is becoming better positioned as an international airport. As for the question concerning increase in business opportunities shown in Figure 10 (targeting (1)), many said it has “largely increased” and “increased”. In other words, it is assumed to be positively affecting local companies with more business opportunities. Judging from the above, impacts of this project on the economy of the Alexandria Governorate and the surroundings are not negligible.

## 2) Quantitative Effects

Figure 11 shows changes in the GDP growth rate of Egypt as a whole from before the start of this project until recently. There are no GDP data exclusively for the Alexandria Governorate<sup>26</sup>. It is possible that the governorate's GDP has been growing in a similar manner to that of the country; however, it is not easy to prove that it was related to this project<sup>27</sup>. It is judged that the economic stagnation after 2011 was caused by the political/economic/security situations in the aftermath of the Egyptian revolution. On the other hand, companies in and around Alexandria (hotels, banks and tourism industry) commented in interviews: "The construction of the passenger terminal building at Borg El Arab Airport is a chance for the local businesses. Alexandria has an increasing number of visitors and the number of international and domestic conferences and events held in Alexandria is increasing. One can say that this airport is one factor revitalizing the local economy. Although the country's economy is stagnating, the completion of this project has given the local business sector many possibilities. As many LCC flights have begun using this airport, more people are travelling to the gulf countries, such as Jeddah and Kuwait, with lower fares and it has become more affordable to migrate for work. In that sense, the airport is creating opportunities for many people." Based on such comments, it is presumed that this project is directly and indirectly supporting economic and social development in the Alexandria Governorate.



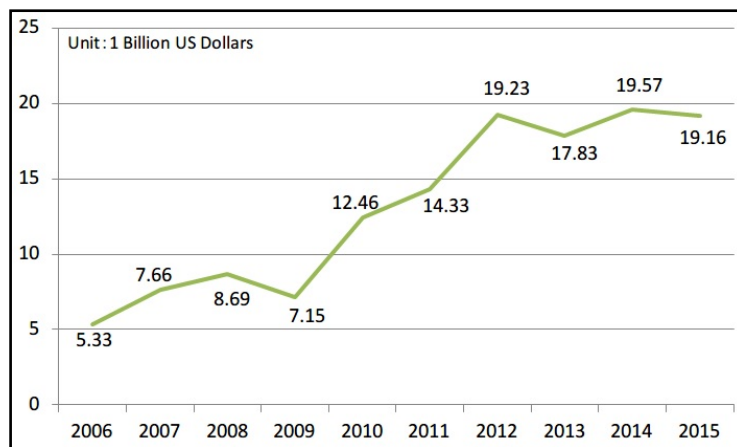
Source: World Bank

Figure 11: GDP Growth Rate of Egypt

<sup>26</sup> It is because regional data is not sufficiently collected and managed in Egypt.

<sup>27</sup> According to the management of CAPMAS and EAC, "There is little variation among the regions in terms of GDP growth rate. It is thought that the trends are almost the same for the Alexandria Governorate and the national average GDP growth rate."

Figure 12 shows data on remittances from Egyptians working abroad. The amount has been increasing since the start of this project. Since the Egyptian revolution in 2011, an increasing number of people have been migrating to the gulf countries due to the economic downturn, which it is assumed that the remittances to Egypt have been increasing. Data on the changes in number of migrant workers could not be obtained; however, according to the most recent data released by CAPMAS, there are about 2.7 million Egyptian migrant workers in the world, of which roughly 1.9 million are in the gulf countries. In any case, considering that the amount of remittances is on the increase after the completion of the project (September, 2011) as shown in Figure 12, the number of Egyptians going to neighboring countries for work (80-90% of the total airport users) using Borg El Arab Airport is expected to be sustained at the current 1.9 million level. It is thought that this project contributes to the supports for household incomes and national economy through remittances.



Source: IECONOMICS

Figure 12: Remittances to Egypt

### 3.4.2 Other Impacts

#### 3.4.2.1 Impacts on the Natural Environment

For this project, it was necessary to develop a report specifying construction methods, whether or not environmental issues were foreseen and to get approval from the Egyptian Environmental Affairs Agency (EIA). The approval for EIA was granted in October 2004, before the start of the project.

The questionnaires, EAC interviews and site inspections confirmed that there was no negative environmental impact after the completion of this project. No negative impacts in

terms of air pollution, water quality, noise/vibration or ecological systems were observed<sup>28</sup>.

With regard to the institutional arrangement concerning environmental monitoring, EAC's environmental department handles a wide range of tasks, from environmental screening for new projects to waste management planning and implementation. In addition, MOCA, a supervising body, conducts external monitoring by sending inspectors periodically. In case of problems, immediate action will be taken. Since there have been no problems thus far after the completion of the project, no measures have been taken based on the findings of environmental monitoring.

#### 3.4.2.2 Land Acquisition and Resettlement

It was confirmed through questionnaires and EAC interviews that there were no cases of land acquisition or resettlement in this project, because it was an upgrading of the existing airport.

This project has largely achieved its objectives. Therefore, the effectiveness and impact of the project are high.

### 3.5 Sustainability (Rating: ③)

#### 3.5.1 Institutional Aspects of Operation and Maintenance

The executing agency of this project is EAC, and its Borg El Arab Airport branch carries out the operation and maintenance of the airport. At the time of the ex-post evaluation, there were 321 staff members at the branch, of which 75 were in the operation department which operates passenger aircrafts, while 136 are in the maintenance department which maintains the airport's overall facilities<sup>29</sup>. A wide range of tasks are carried out, including operation and maintenance of airstrip lights, boarding bridges and other machines and equipment inside the airport, operation of IT infrastructure networks, management of each floor inside the airport (e.g., check-in desks, baggage claim, passport control and departure/arrival halls). It was confirmed through the questionnaires and interviews with EAC and airport branch staff during the evaluation study that the numbers of staff are sufficient both for the operation and maintenance departments. Given the recent increase in passenger numbers, EAC is making efforts by recruiting new staff, so that the airport services will not be compromised due to staff shortage. Therefore, it is thought that there are no particular problems in the institutional aspects

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<sup>28</sup> Around Borg El Arab Airport there are no residential areas or commercial facilities and there has been no case of noise/vibration or health hazards.

<sup>29</sup> Data as of the end of 2015 (source: EAC).

of the operation and maintenance of this project.

### 3.5.2 Technical Aspects of Operation and Maintenance

A number of training courses are offered to EAC employees. For example, EAC gives training courses on “Airport Management”, “Aviation Radio Maintenance” and “Electric Machines (Basics and Advanced)”. Other government institutions (e.g., the Ministry of Environment) give training on “Environmental Monitoring Inspection”, “Feasibility Study for Environmental Projects” and “Environmental Management of Dangerous Substances and Wastes”. In addition, international organizations offered training courses on “Airstrip Light Management”, “Airport Security System” and “Building Monitoring and System” recently (after 2010 or the completion of the project). On-the-job training (OJT) is also provided. When new staff are recruited, OJT will be given, whereby maintenance technologies and skills are shared. It was also confirmed through interviews that participants in JICA’s “Airport Management Training” (additional output) described in Section 3.2.1 Project Outputs under Efficiency shared the knowledge and experience gained through their training with other staff, while using it as a vehicle for work motivation and improving work quality. Additionally, at this airport, maintenance works are carried out based on the operation and maintenance manual that the contractor of this project provided. Safety procedures and maintenance related to aircraft operation are in line with the standards set by the International Commercial Airlines Organization (ICAO). Thus, no major problems are observed in the technical aspects of the operation and maintenance of this project.

### 3.5.3 Financial Aspects of Operation and Maintenance

Table 4 shows the operation and maintenance costs of Borg El Arab Airport. Table 5 is the income statement of EAC and Table 6 is its balance sheet.

Table 4: Operation and Maintenance Costs of Borg El Arab Airport (Last three years)  
(Unit: Thousand LE)

Item		2013	2014	2015
Operation Cost	Salaries	14,123	14,226	15,582
	Electricity	2,926	3,287	4,909
	Water Utility	192	103	239
	Cleaning	2,213	2,933	2,504
Maintenance Cost		1,738	6,600	12,929

Source: EAC

Table 5: Financial Revenue and Expenditure Statement Sheet of EAC  
(Unit: Thousand LE)

Item	End of June 2013	End of June 2014	End of June 2015
Operational Profit	1,449,725	1,454,678	2,017,960
Operational Cost	(585,112)	(616,438)	(930,502)
Profit from Sales	864,613	838,240	1,087,458
Other Profit	201,928	173,813	334,413
Other Costs	(679,180)	(686,662)	(819,079)
Current Net Income	387,361	325,391	602,792

Source: EAC

Table 6: Balance Sheet of EAC

(Unit: Thousand LE)

Item	End of June 2013	End of June 2014	End of June 2015
Fixed Assets	5,422,360	6,223,815	6,235,819
Current Assets	1,871,389	2,143,448	2,973,096
Assets	7,293,749	8,367,263	9,208,915
Fixed Liabilities	2,928,949	2,034,654	2,207,694
Current Liabilities	2,150,949	2,629,733	2,629,852
Shareholders' Equity	2,213,851	3,702,876	4,371,369
Liabilities and Equity	7,293,749	8,367,263	9,208,915

Source: EAC

The operation cost shown in Table 4 is more or less on the increase. This is because the number of passengers has been increasing at Borg El Arab Airport and so necessary budgets have been allocated. Regarding the maintenance costs, while not much cost was caused because the facilities and equipment developed by this project were covered by warranty until mid-2014 (guarantee period was two years), needed maintenance budgets (12,929 thousand LE shown in Table 4) were allocated starting from mid-2014, when the warranty period ended<sup>30</sup>. EAC and the management of the airport commented in the interviews: "Every year we are able to allocate sufficient budgets. With more users, we think it is important that necessary budgets are duly allocated." Thus, it is reasonable to think that appropriate operation and maintenance costs have been expended. Concerning the income statement shown in Table 5, the current net income has been positive every year. Additionally, the balance sheet shown in Table 6 shows that equity has

<sup>30</sup> Operation and maintenance is carried out using internal funds. The questionnaires and interviews confirmed that the central government and other institutions (such as international organizations) do not provide subsidies to this project's operation and maintenance organization.



been increasing; hence there is no financial concern for the near future. Therefore, it can be judged that the EAC is in a good financial situation and that there are no major concerns in the financial aspects of the operation or maintenance of this project.

#### 3.5.4 Current Status of Operation and Maintenance

There are no major problems in terms of the operation and maintenance status of the facilities developed by this project. Maintenance works for the facilities developed by this project (passenger and cargo terminal buildings, apron and taxiway) are carried out during the daytime, when few flights are operated. EAC develops an annual operation and maintenance plan, based on which Borg El Arab Airport branch implements the operation and maintenance tasks. In addition, spare parts are procured smoothly and there is no problem with the ways in which they are stored<sup>31</sup>.

No major problems have been observed in the institutional, technical or financial aspects of the operation and maintenance system. Therefore, the sustainability of the project's effects is high.

## 4. Conclusion, Lessons Learned and Recommendations

### 4.1 Conclusion

This project constructed and expanded the passenger and cargo terminal buildings and the connected facilities for Borg El Arab Airport near Alexandria, the second largest city in Egypt, in order to respond to increasing demand for air traffic and to improve the quality of services. With regard to relevance, the government of Egypt has indicated its intention to develop infrastructures to cope with an increasing air traffic demand in the *Fifth Five-year Social Development Plan* and the *Strategic Framework for Economic and Social Development*. While it was expected, before the start of this project, that the number of passengers that this airport would be capable of accommodating would increase, further expansion of this airport was planned at the time of the ex-post evaluation. The project is also in line with the assistance policy of the Japanese Government. Thus, relevance is high. As for efficiency, the project cost was slightly higher than the initial plan because the locations of the passenger and cargo terminals, as well as the associated facilities, were reviewed and changed during the detailed

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<sup>31</sup> Most of the spare parts can be procured domestically. When they need to be procured internationally, they can be procured within three months. Spare parts are kept in a store inside the airport.

design after the start of this project. The project period was also slightly longer than the initial plan due to a change in design of the passenger terminal. Thus, the efficiency is fair. Since the start of this project, as the number of Egyptian workers migrating to gulf countries has been increasing, the numbers of passengers and flights departing from and arriving at the airport have been accordingly more than the initial targets. Considering that both beneficiary survey and interviews confirmed by and large positive impacts on the airport's services and local economy, effectiveness and impact are high. Additionally, no particular problems were observed in the institutional, technical or financial aspects of the operation and maintenance of this project; thus sustainability of the effects realized through this project is high.

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

## **4.2 Recommendations**

### **4.2.1 Recommendations to the Executing Agency**

Considering that the number of passengers is on the increase at Borg El Arab Airport, it is recommended that the EAC continue to make efforts toward smooth airport operation and improve airport services. Given the loads of luggage left behind at the baggage claim area, it is considered necessary to take measures to remind passengers arriving at the airport to be aware of their belongings.

### **4.2.2 Recommendations to JICA**

None.

## **4.3 Lessons Learned**

### Contribution to Improved Airport Service through Training, Considering the Introduction of Training at the Time of Project Formulation

In this project, "Airport Management Training" was conducted as an additional output and many employees working at Borg El Arab Airport participated in the training. It is thought that such training is contributing to some extent to the improved airport services for the flight check in, passenger guiding and hand luggage inspection, which are day-to-day operation and maintenance works. Considering that the numbers of flight departures/arrivals and passengers have been drastically increasing at the time of the ex-post evaluation, it is fair to say that such training was essential for ensuring and strengthening airport services. The experiences of the training participants can be fundamental for the implementation of the following airport

expansion project; thus it was insightful to have planned for such training during the project formulation. Therefore, it is suggested that JICA and the partner country consider supports regarding building capacities to provide improved airport services through implementation of the training as needed when formulating similar projects in the future.

Comparison of the Original and Actual Scope of the Project

Item	Plan	Actual
1.Project Outputs	1) Construction of Passenger Terminal Building: floor area of 20,840m <sup>2</sup> , capable of accommodating approx. one million passengers per year	The plan was changed: floor area was increased (to 24,277 m <sup>2</sup> ), capable of accommodating approx. one million passengers per year
	2) Construction of Cargo Terminal Building: floor area of 890 m <sup>2</sup> , capable of accommodating approx. 4,000 ton per year	The plan was changed: floor area was increased (to 1,990 m <sup>2</sup> ), capable of handling approx. 10,000 ton per year
	3) Development of Apron and Taxiway: 1,494m x 23m	The plan was changed: length of the extension was reduced (923m x 23m)
	4) Development of Associated Facilities (roads, parking space, power supply facilities, water and sewage facilities)	As planned, however additional outputs were three passenger boarding bridges and one elevator for transit passengers.
	5) Consulting Services (detailed design, preparation of tendering documents, assistance for tendering and contracting, construction supervision, environmental monitoring and institutional strengthening)	As planned, however additional outputs were training courses in Japan on “airport management and components” and “detailed design for the second project, succeeding to this project.” In addition, an airport control tower was constructed in the premises with the fund of the Egyptian side.
2.Project Period	March 2005 – December 2009 (58 months)	March 2005 – September 2010 (67 months) *Exclude additional outputs
3.Project Cost  Amount Paid in Foreign Currency	5,732 million yen	5,712 million yen

Amount Paid in Local Currency	2,843 million yen	7,164 million yen Expense in USD: 289 million yen
Total	8,575 million yen	12,876 million yen
Japanese ODA Loan Portion	5,732 million yen 1USD=110JPY, 1LE=17.7JPY (As of March 2005)	5,718 million yen 1USD=98.46JPY, 1LE=16.95JPY (Average during the project's implementation. Source: International Financial Statistics, IMF)
Exchange Rate		*Includes additional outputs