

Kenya

Mombasa International Airport Improvement Project

Report Date: October 2002

Field Survey: August 2001¹

1. Project Profile and Japan's ODA Loan



Project Site

Mombasa Airport (Rehabilitated Apron)

1.1. Background

Tourism is one of the largest foreign currency earning sectors in Kenya.² Mombasa, Kenya's second largest city facing the Indian Ocean, is conveniently located near major tourist attractions including coral beaches and national safari parks. Mombasa International Airport³, inaugurated in 1979 as the country's second international airport, after expanding and upgrading an existing local airport with financial assistance by a Japanese ODA loan, provided direct flight connections to major European countries, from which many tourists originated, and inter-African and domestic flights.

The runways and other facilities of Mombasa Airport started being severely deteriorated because of lack of maintenance equipment. Moreover, the terminal building and adjoining apron were reaching their capacity owing to the rapid increases in the number of airplanes. Therefore, there was an urgent need to rehabilitate and expand the airport in order to secure its safe and efficient operation and to meet increasing air traffic demand.

¹ A supplemental field survey was conducted from January to February 2002.

² Tourism constitutes 10.9% of GDP in 1991 and 12.5% in 1999.

³ Also known as Moi International Airport.

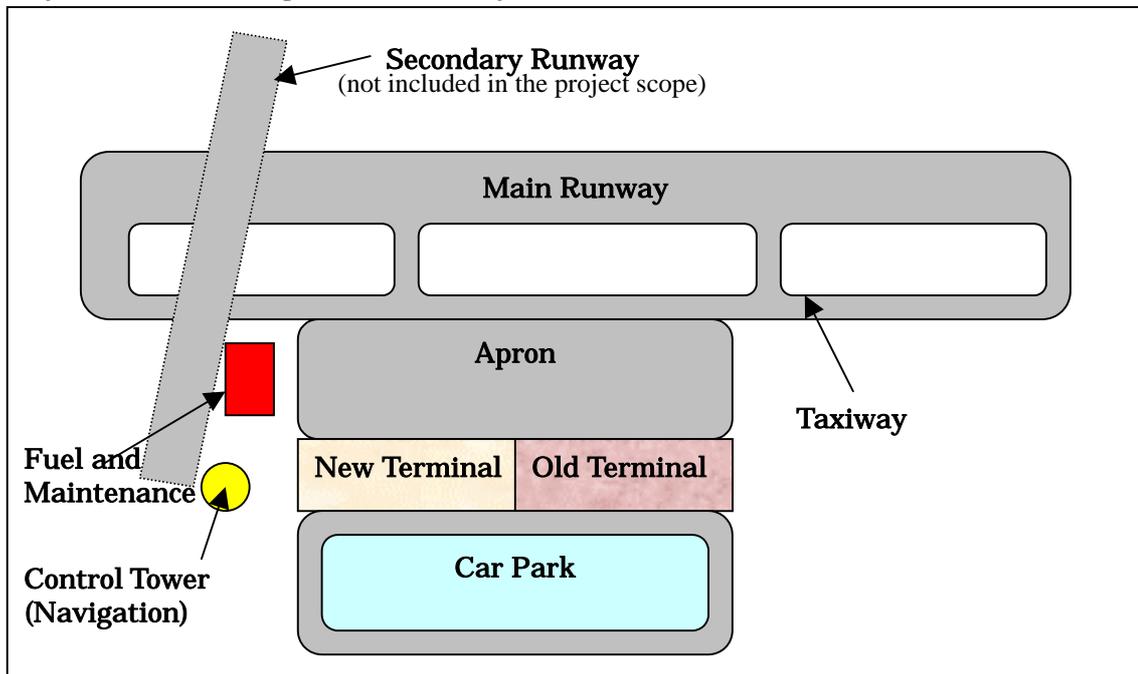
1.2. Objectives

To rehabilitate runway and taxiway of the Mombasa International Airport and to expand its passenger terminal buildings in order to secure safe and efficient airport operation and to contribute to tourism promotion and regional development.

1.3. Project Scope

The project consists of the following construction and procurement of airport facilities as well as related consulting services: (i) temporary repair of runway pavement; (ii) rehabilitation of runway and taxiway; (iii) expansion of passenger terminal building (from approximately 12,000m² to 29,000m²); (iv) expansion of apron (from approximately 66,000m² to 123,000m²); (v) expansion of road and car park including lighting and toll gates; (vi) supply of maintenance and workshop equipment; (vii) rehabilitation and renewal of air navigation system; (viii) fuel hydrant system; and (ix) consulting services.

Major Civil Work Components of the Project⁴



1.4. Borrower / Executing Agency

⁴ This is a simplified map which does not necessarily reflect true scales.

Government of the Republic of Kenya / Aerodrome Department, Office of the President
(presently Kenya Airports Authority: KAA)

1.5. Outline of Loan Agreement

Loan Amount	9,010 million yen
Loan Disbursed Amount	9,010 million yen
Exchange of Notes	March 1990
Loan Agreement	March 1990
Terms and Conditions	
Interest Rate	2.5 %
Repayment Period (Grace Period)	30 years (10 years)
Procurement	Partially Untied
Final Disbursement Date	March 1997

2. Analysis and Evaluation

2.1. Relevance

The original project objective of rehabilitating runway and taxiway of the Mombasa International Airport and expanding its passenger terminal buildings was relevant, in terms of national development priority of promoting tourism-based regional development. The Mombasa Airport has served as a hub of the Eastern African regional airline network, providing access to major European flights for passengers coming from neighboring countries and vice versa.

The current national development plan as envisaged in the Poverty Reduction Strategy Paper (PRSP) states, “Air Transport remains the major transport mode for tourists, high value exports and perishable goods and for promoting regional integration. Improvement of airport facilities and landing strips through maintenance and equipment provision will enhance the quality of air services.”⁵ Recent tourism products are being diversified, ranging from adventure, wild life and business conference tourism, to eco-tourism, cruise ship tourism, for all of which Mombasa has comparative advantage. Hence, the original project objective of tourism-based regional development by improved airport facilities is still relevant in today’s

⁵ Kenya Interim Poverty Reduction Strategy Paper, p.15, 2000.

context.

2.2. Efficiency

2.2.1 Scope

Due to the increased cost of runway and taxiway rehabilitation, some other project components, such as provision of perimeter road and security fence, general aviation apron pavement, and expansion of road and car park, had to be either fully or partially scaled down. It is considered that this modification in the scope was relevant, in the light of the urgent need of rehabilitation works and the limitation of funds available from JBIC finance.

2.2.2 Schedule

The project was completed in October 1996. The total implementation schedule was thus delayed for 2 years and 8 months. Above all project components, the delay in runway and taxiway rehabilitation was the longest, taking one year and half to complete, or 8 months longer than originally planned. Another component was the extended maintenance period for passenger terminal building, taking 9 months, or 8 months longer than originally planned. One of the reasons of the delay was an unusually high precipitation in Mombasa region during the rainy season (April to June) in 1994. This caused frequent interruptions of civil works and necessitated additional works for runway and taxiway rehabilitation. This situation led to the implementation delays. In addition, the delayed payment from Kenya Airport Authority (KAA) to the contractor and slow approval procedures across ministries joined further causes of delay.

2.2.3 Cost

Both foreign and local costs increased, from original 7,401 million yen to actual 7,695 million yen and from original 450 million Kenya Shillings (Ksh) to Ksh 949 million. However, the depreciation of local currency against yen actually reduced the yen value of the local currency amount from 3,199 million yen to 1,588 million yen, thus making the total project cost reduced from original 10,600 million yen to 9,283 million yen.

2.3. Effectiveness

2.3.1 Number of Passengers

With the expanded capacity of runway and terminal after the end of 1996, the number of passengers exceeded the pre-project level: from 309 thousand in 1988 to 498 thousand in 1997 for international flights, and from 274 thousand in 1988 to 314 thousand in 1997 for domestic flights. Compared with the forecast at the time of appraisal, however, the actual demands of international flights in 1997 resulted 11.7% lower than the forecast, and domestic flights 42.3% lower. The number of passengers from 1998 to 2000 could not catch up with the forecast demand after all.

Table 1: Breakdown of Passengers – Mombasa Airport (thousand people) : Before and After Project

	International			Domestic		
	Forecast	Actual	Gap	Forecast	Actual	Gap
1988 (Before Project)		309			274	
1997 (After Project)	564	498	-11.7%	544	314	-42.3%
1998	586	292	-50.2%	566	446	-21.2%
1999	608	359	-41.0%	588	480	-18.4%
2000	630	398	-36.8%	610	456	-25.2%

Source: KAA

The air travel demands to and from Mombasa grew slower than planned, partly because Kenya's economic growth was slower than forecast. The original demand forecast was made on the assumption of Kenya's annual GDP growth of 5.4% up to 1995 and 3.0% thereafter. Actually, the annual GDP growth was 2.1% for 1990-95 and 1.5% for 1996-2000, respectively⁶. The donor community's growing concerns over public administrative transparency and governance until the early 2000, when Kenya finally accepted to collaborate with the World Bank and IMF to draft the macroeconomic framework based on the PRSP, prevented Kenya from getting adjustment loans and allegedly accelerated the economic downturn.

Another reason for the slow passenger demand is that the increasing security concerns scared off foreign tourists from Kenya since the terrorist attack of the United States Embassy in Nairobi in 1998.

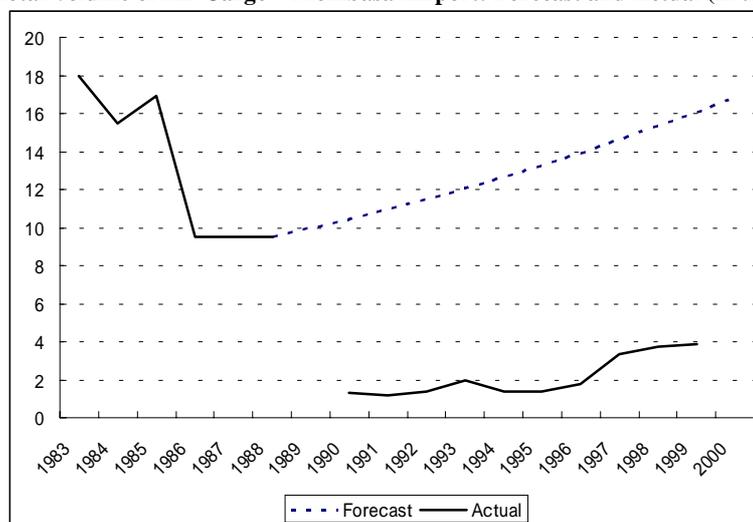
2.3.2 Volume of Air Cargo

With the same assumption, the cargo handling volume was forecast to grow 4.9% annually at the time of appraisal. The actual air cargo volume has remained substantially below the forecast demand. This sharp decline is due to, in addition to the worsening macroeconomic situation, the fact that the infrastructure for alternative transportations (especially roads) has

⁶ Another implication of the slow economy is Kenya's export that declined by 14.8% during 1996-2000.

been improved⁷, and the air cargo has lost its competitiveness in the domestic market.

Figure 2: Total Volume of Air Cargo – Mombasa Airport: Forecast and Actual (in thousand ton)



Source: Kenya Statistical Abstract (various years)

Table 2: Breakdown of cargo handling volume by destination (in ton)

	International	Domestic	Total
1995	1,141	429	1,570
1996	1,731	724	2,456
1997	2,445	858	3,304
1998	2,790	354	3,145
1999	2,020	329	2,349
2000	2,276	438	2,715

Source: KAA

2.3.3 Cost-Benefit Analysis

As in the appraisal, both EIRR and FIRR have been re-calculated with the following assumptions:

Project Life: 25 years

1) For EIRR: (in 1989 prices)

Benefits:⁸ economic gains from incremental flights (incremental passengers, etc).

Costs: Incremental investment and Operations and Maintenance (O&M) costs

2) For FIRR: (in 1989 prices)

Benefits: Incremental revenues from the project, including landing fees, air bridge charges, building rent, aviation fuel, etc.

Costs: Incremental investment and Operations and Maintenance (O&M) costs

⁷ Japanese ODA loans made contribution to part of the improvement.

⁸ The original calculation included “economic gains from introduction of large-size aircrafts” as a benefit which is not included in the re-calculation due to the data limitations.

All other assumptions are kept as in the original appraisal. The re-calculated EIRR is 9.5%, which is a huge drop from the original 30.9%, and the re-calculated FIRR is actually negative, in contrast with the original 4.4%. The main reason for this drop is due to the number of passengers and the volume of air cargo that were substantively below the projected level, which also led to a loss of incremental revenues.

2.3.4 Overall benefits

These reviews suggest that, of the original project objective of “securing safe and efficient airport operation”, the safety aspect was met, since, according to KAA officials, there has not been any serious aircraft accident since the project completion. However, the efficiency aspect was not sufficiently met due to the shrinking air traffic demand. Regarding the objective of “contributing to tourism promotion and regional development”⁹ is to be examined in Section 2.4.

2.4. Impacts

2.4.1 Tourism-based regional development

Kenya’s coastal regions host internationally renowned tourist centers that offer safaris, national parks, and oceanic sports. Mombasa served as an entrance point to the region, and this project was expected to further promote tourism-based regional development. However, due to the recent worsening of both economic and security situations in Kenya, the number of tourists to the coastal region has sharply declined.

IMF estimates that foreign currency earnings from tourism declined sharply from 486.0 million dollars in 1995 to 259.3 million dollars in 2000, largely because “the coastal region, in particular, has suffered as a result of deteriorating security.”¹⁰

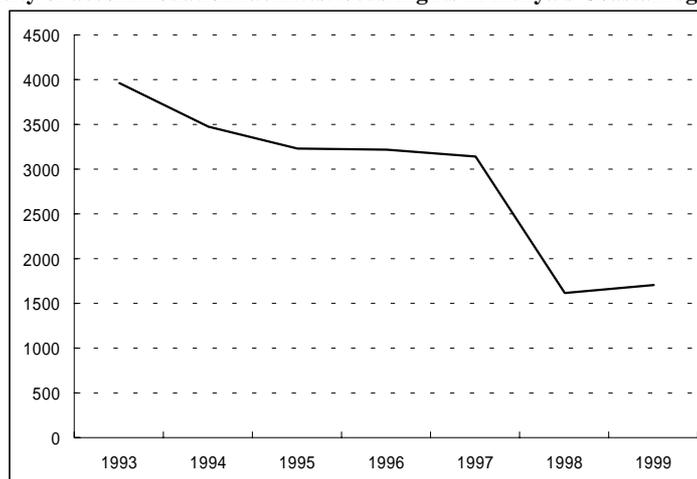
As the World Bank mentions, “despite large-scale investment in upgrading of Mombasa’s airport, tourism declined in the 1990s, due to deteriorating infrastructure, inadequate promotion and marketing, competition from other African countries, and deterioration of the country’s image as a travel destination. Establishment of an export promotion zone has

⁹ This was originally listed as a “qualitative effectiveness” at the time of appraisal, but it is better considered as “impact” by widely-accepted standards for evaluation today.

¹⁰ IMF (2002), *Kenya: Selected Issues and Statistical Appendix*, p.49.

attracted some foreign and domestic investment and has employed about 3,000 people, but growth of industry and services more broadly in the city is restricted by severe water shortages, frequent power failure, a shortage of serviced industrial land, and high levels of crime and insecurity.”¹¹

Figure 3: Capacity of accommodation facilities: beds-nights in Kenya’s Coastal region (in thousand)



Source: Kenya Statistical Abstract (various years)

2.4.2 Environmental impacts

The following aspects were examined: 1) Impacts on water for life (animals and plants) and fishery; 2) Impacts on soil and water quality; and 3) Noise from airport. According to KAA, none of these problems have been reported since the completion of the project.

¹¹ World Bank (2001), <http://www1.worldbank.org/nars/ucmp/UCMP/intro.htm>

2.5. Sustainability

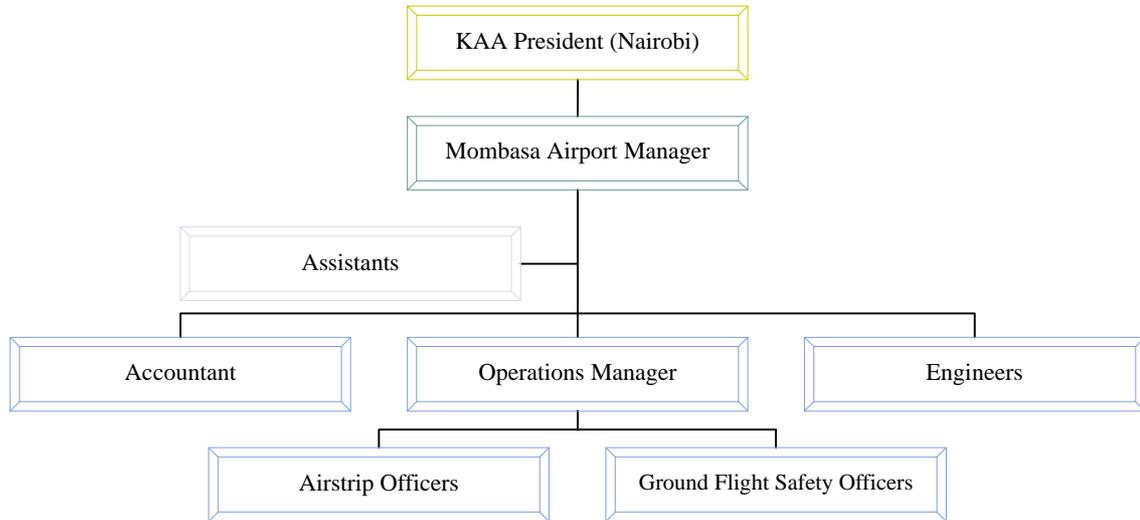
2.5.1 Operations and Maintenance (O&M)

The Mombasa Airport is under management of the KAA (headquartered in Nairobi) and operated by a resident airport manager with 100 full-time airport staff, in addition to a few hundreds part-time and sub-contracted private operators in various parts of the airport, who used to be full-time KAA staff in the past. At the time of appraisal, there were 530 airport staff under the Aerodromes Department, before it became corporatized into KAA in 1994. JBIC recommended to the airport authority, prior to extending this financial assistance, that the number of airport staff should be increased to 1,100 by the year 2000 in order to meet the additional demand after the project. Since the KAA was established, however, the number of operational staff has been drastically cut, in accordance with the nation-wide program on civil service and institutional reforms and structural adjustment programs promoted by the World Bank and the IMF.

The purpose of the structural adjustment programs was to reinvigorate the economy by streamlining ministries and state-owned enterprises in order to promote private investments. The previously government-owned Kenya Airways was privatized, after which half of their shares were sold to a foreign airline company. However, the adjustment programs went off track by the late 1990s. The credit crunch made public and private sectors financially unstable. Due to the government budget constraint, government employees were not paid over several months. At KAA, draconian measures were taken to downsizing the human resources. During this process a number of qualified personnel had to leave their positions. At Mombasa Airport, since some key managerial positions¹² have been vacant for several years, most key O&M activities are directly handled by the airport manager. Hence, the overall institutional and managerial capacity of the airport has not sufficiently been strengthened, if not weakened, contrarily to what was expected at the time of appraisal. Human resource and administration manager, who used to handle airport staff training, has been laid off. Currently, the human resource development is handled directly by Nairobi Headquarters and, currently, there is no systematic training program targeted at the Mombasa Airport.

¹² For example, airport security services manager, human resource and administration manager, chief fire officer, marketing and development manager, customer service manager, and system analyst have been vacant positions.

Figure 4: Organization Structure of Mombasa Airport



2.5.2 Present maintenance condition

1) Cracks in Touchdown Area: The right-hand side touchdown area of the main runway is relatively in good condition. However, surface cracks are observed on the left touchdown area around the intersection with the secondary runway over a length of approximately 150 meters. Due to the prevailing wind directions, the problem area of the runway is used only February - March and October - December.

According to the airport officials, some cracks already started appearing in the sub-base after the completion of rehabilitation works of runway and taxiway in 1995 and the surface cracks started appearing after heavy rains under influence of the El Niño in 1997. Based on the preliminary inspection, the cracking of the runway is attributable to continuous changes in the moisture content in the base and sub-base of the runway. Further geotechnical testing will have to be carried out to confirm this point, based on which possible solutions to curtail the cracks could be proposed.¹³

¹³ While temporary and partial repairs on the surface have been made from time to time, a full-scale repair work on the deteriorated area including the sub-base remains undone. The consultant for project management during the implementation period roughly estimates it would cost 600-700 mil yen.



Cracks in Main Runway



Cracks in Secondary Runway

2) Unused Luggage Handling Facilities in Old Terminal: According to the airport manager, the conveyer system in the arrival lounge of the old terminal, originally installed in 1974, was rehabilitated under the project.¹⁴ The rehabilitation included replacement of some rollers and bearings, which subsequently ceased to function, however, due to lack of proper maintenance. The rehabilitated conveyer worked only for a short period.

At the time of appraisal, it was anticipated that, upon completion of the new terminal, some operators including the Kenya Airways would continue to use the old terminal, whereas other airlines would use the new terminal. However, no major operator¹⁵ actually uses the old terminal and it has been neglected for long, resulting in its deterioration of equipment and buildings over time. The second luggage



Luggage Turntable in Deterioration

conveyor was operational during the rehabilitation of the first one, but was dismantled. The conveyor in the departure lounge is not operational either.

Other O&M equipment and facilities are generally operational, although they are often operated by insufficiently trained personnel.

2.5.3 Financial viability

¹⁴ Financed under “renovation of the existing passenger terminal” component.

¹⁵ Actually some small airline companies including Air Kenya and smaller aircrafts occasionally use the old terminal for arrival, but the departure section has been completely neglected.

The Mombasa Airport has no financial autonomy from KAA and it has no separate balance sheet.¹⁶ For fiscal years 1997 through 2001, the airport has been in surplus due to the streamlined personnel and administrative costs. However, this restructuring has been realized at the expense of worsening maintenance quality. The airport will have difficulties in handling the increased passengers, due to the lack of trained personnel and the problematic sections of the runway and terminal. In order to enhance project sustainability, therefore, it is expected that this operating surplus will be employed to improve maintenance (by hiring qualified staff, upgrading maintenance equipment, etc.)

¹⁶ KAA currently publishes no annual report describing balance sheet and business plan.

Table 3: Financial Information of Mombasa Airport (Unaudited - for reference purpose only)

	Unit: thousand Ksh				
	1997	1998	1999	2000	2001
Revenue					
Landing&Parking	144,129	157,418	162,559	165,040	168,664
Air Bridge Charges		2,457	23,068	22,882	24,747
Building Rent	25,396	26,403	40,111	42,839	43,518
Trade Concessions	4,996	28,287	45,031	23,405	27,783
Aviation Fuel	27,914	23,361	22,081	22,772	23,384
Car Parks	8,873	10,160	11,116	13,184	18,200
Security Passes	1,701	1,139	729	2,382	800
Left Luggage	78	81	61	37	50
Fire&Rescue	1,359	1,401	1,988	285	184
Water	2,161	2,117	3,653	5,542	5,260
Electricity	4,600	3,690	7,003	11,554	8,142
Telephone	1,443	823	978	1,041	1,000
Other Revenue	1,257	299	532	84	100
<i>(Total)</i>	<i>223,907</i>	<i>257,636</i>	<i>318,910</i>	<i>311,047</i>	<i>321,832</i>
Operating Expenses					
Staff Costs	45,533	53,828	68,195	97,562	109,023
Administration Costs	25,179	34,480	48,756	66,685	80,022
Purchase of Stores	11,104	12,139	6,222	9,022	12,000
Repairs and Maintenance	20,293	11,208	16,670	15,969	30,000
<i>(Total)</i>	<i>102,109</i>	<i>111,655</i>	<i>139,843</i>	<i>189,238</i>	<i>231,045</i>
Operating Surplus/Deficit	121,798	145,981	179,067	121,809	90,787
Exchange Rate (KSh per US\$)	58.0	61.8	70.4	76.3	78.6

Source: KAA

3. Recommendations

- It is recommended that technical inspections shall be carried out by the executing agency for the technical problems reported herein (i.e., cracks in runway and deteriorated luggage turntable) as soon as possible.
- The executing agency should address the issues as mentioned in the section 2.5, by fostering its organizational capacities to enhance the sustainability, in the field of operation and maintenance in particular.

Comparison of Original and Actual Scope

Items	Original	Actual
(1) Project Scope		
1. Temporary Repair of Runway Pavement	Patching	As planned
2. Rehabilitation of Runway and Taxiway	Rehabilitation of Runway & Taxiway Improvement of Box and Pipe Culverts Runway Lighting Ground Stability and Drainage Rehabilitation Perimeter Road and Security Fence	Additional Works Scaled Down As planned Additional Works Scaled Down
3. Expansion of Passenger Terminal Building	Construction of New Passenger Terminal Building Renovation of the Existing Passenger Terminal Building and Special Equipment Airport Utilities	As planned As planned Some modifications (see text) As planned
4. Expansion of Apron	Construction of Passenger and Cargo Loading Apron Apron Lighting General Aviation Apron Pavement	Scaled Down (no cargo apron constructed) Increased in floodlights (9->12) Scaled down (69,600m ² ->38,000 m ²)
5. Expansion of Road and Car Park including Lighting and Toll Gates	pavement lightening toll gates	Scaled down (21,500 m ² ->15,200 m ²) Increased As planned
6. Supply of Maintenance Equipment	Mechanical sweeper, Power grader, Tipper etc.	Scaled down
7. Air Navigation System	Transmitters and receivers, etc.	Scaled down
8. Fuel Hydrant System	1	As planned
9. Consulting Services	469 M/M	Increased (m/m: n.a.)
(2) Implementation Schedule		
1. Temporary Pavement Repair of Runway • Implementation • Maintenance	Apr 1990/1-Jun 1990/1 Jul 1990/1-Mar 1991/2	Oct 1990 – May 1991 May 1991 – May 1992
2. Consulting Services • D/D • Assistance in Tendering • Construction Supervision • Maintenance	Apr 1990-Mar 1991 Apr 1991-Jun 1993 Jul 1993-Feb 1994 Mar 1994-Feb 1994	Oct 1990-Sept 1991 Dec 1992 – June 1993 Nov 1993-Oct 1995 Nov 1995-Oct 1996
3. P/Q Tender	Feb 1991-Mar 1992	Aug 1991-Sept 1992
4. Rehabilitation of Runway & Taxiway	Jul 1992-Jul 1993	Nov 1993-Jul 1995
5. Expansion of Passenger Terminal Building, etc • Implementation • Maintenance	Oct 1992-Feb 1994 Mar 1994-Feb 1994	Nov 1993-Oct 1995 Nov 1995-Oct 1996

Items	Original	Actual
(3) Project Cost		
Foreign currency	7,401 million yen	7,695 million yen
Local currency	450 million Ksh	949 million Ksh
Total	10,600 million yen	9,283 million yen
ODA loan portion	9,010 million yen	9,010 million yen
Exchange Rate	1 KSh = 7.11 yen (as of July 1989)	1 Ksh=1.67 yen (as of June 1993)