

Corrections in Basic Design Study Report on the Project for Rehabilitation of Public Transport in the Republic of Rwanda, July 2005

Corrected Part	Before Correction(Original)	After Correction (Corrected part is indicated in red.)																		
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BASIC DESIGN STUDY REPORT
ON
THE PROJECT FOR REHABILITATION
OF THE PUBLIC TRANSPORT
IN
THE REPUBLIC OF RWANDA

JULY 2005

JAPAN INTERNATIONAL COOPERATION AGENCY

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05-109

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JAPAN INTERNATIONAL COOPERATION AGENCY

PREFACE

In response to a request from the Government of the Republic of Rwanda, the Government of Japan decided to conduct a basic design study on the Project for Rehabilitation of the Public Transport in the Republic of Rwanda and entrusted the Study to the Japan International Cooperation Agency (JICA).

JICA sent to Rwanda a Study Team from February 9 to February 27, 2005.

The Team held discussions with the officials concerned of the Government of Rwanda, and conducted a field study at the study area. After the Team returned to Japan, further studies were made. Then, a mission was sent to Rwanda from June 5 to June 10, 2005 in order to discuss the draft basic design, and as this result, the present report was finalized.

I hope that this report will contribute to the promotion of the project and to the enhancement of friendly relations between our two countries.

I wish to express my sincere appreciation to the officials concerned of the Government of Rwanda for their close cooperation extended to the teams.

July, 2005

Seiji Kojima
Vice President
Japan International Cooperation Agency

July, 2005

Letter of Transmittal

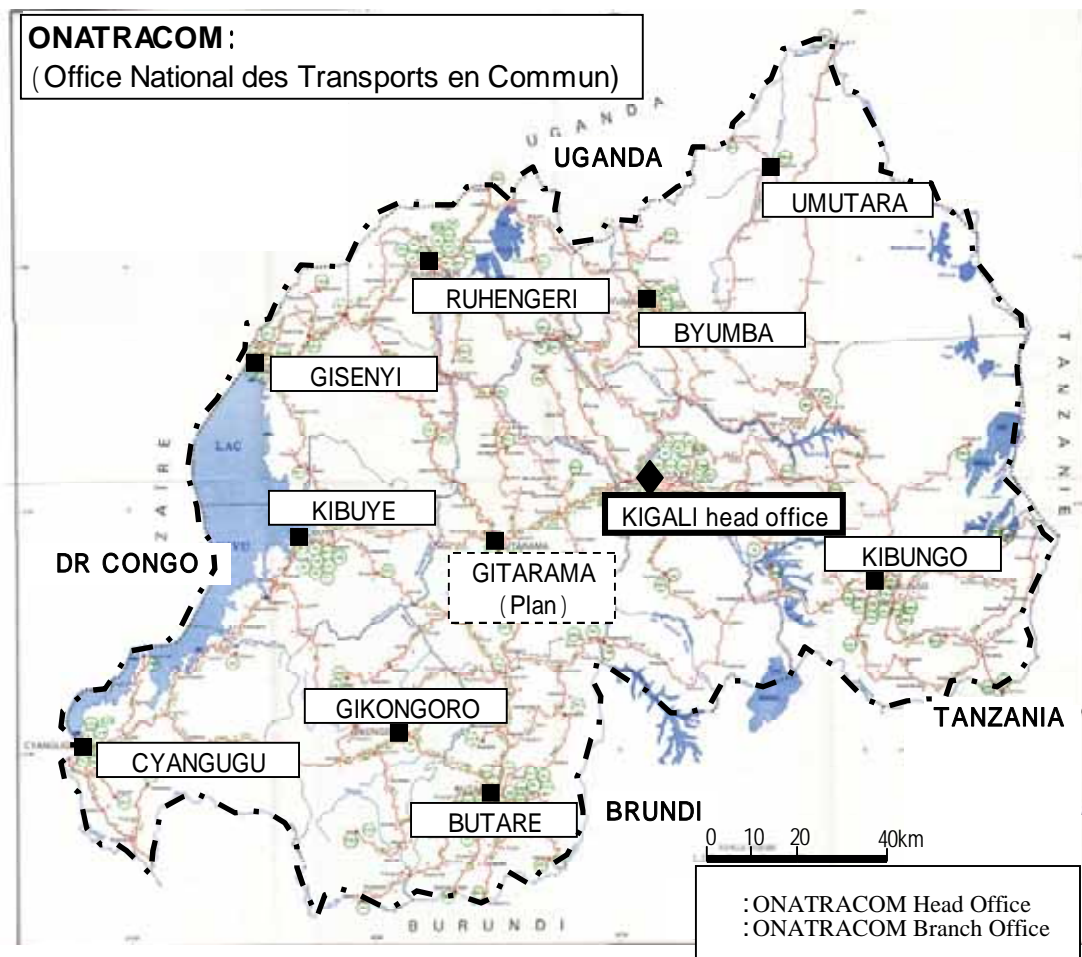
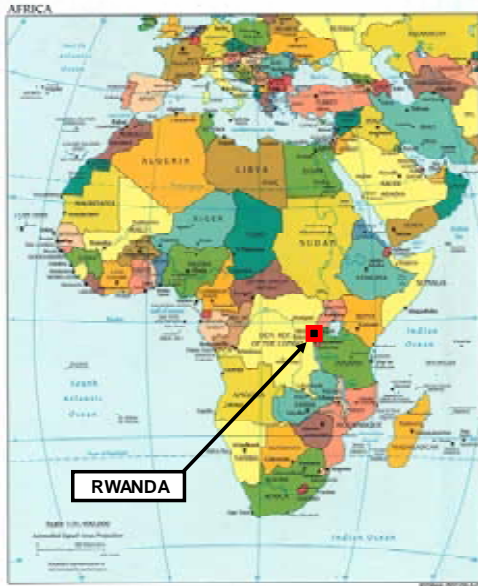
We are pleased to submit to you the basic design study report on the Project for Rehabilitation of the Public Transport in the Republic of Rwanda.

This study was conducted by Japan Engineering Consultants Co., Ltd., under a contract to JICA, during the period from January, 2005 to July, 2005. In conducting the study, we have examined the feasibility and rationale of the project with due consideration to the present situation of Rwanda and formulated the most appropriate design for the project under Japan's grant aid scheme.

Finally, we hope that this report will contribute to further promotion of the project.

Very truly yours,

Hiroaki Takahashi
Project Manager,
Basic Design Study Team on the Project
for Rehabilitation of the Public Transport
in the Republic of Rwanda
Japan Engineering Consultants Co., Ltd.



LOCATION MAP of ONATRACOM Offices

The Project for Rehabilitation of the Public Transport in the Republic of Rwanda
Basic Design Study Report

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Abbreviations

AfDB	African Development Bank
A/P	Authorization to Pay
ASSETAMORWA	Association des Taxi Motos du Rwanda
ATRACO	Association des Transport en Commun
B/A	Banking Arrangement
BHN	Basic Human Needs
DRC	Democratic Republic Congo
EIA	Environmental Impact Assessment
EU	Europe Union
E/N	Exchange of Notes
FRW	Rwanda Franc
GDP	Gross Domestic Product
GNP	Gross National Product
GOR	Government of Rwanda
HIPC	Heavily Indebted Poor Countries
IMF	International Monetary Fund
JEC	Japan Electrotechnical Committee
JEM	Standards of Japan Electrical Manufacture's Association
JICA	Japan International Cooperation Agency
JIS	Japan Industrial Standards
MININFRA	Ministry of Infrastructure
NGO	Non Government Organization
OAU	Organization of African Unity
ODA	Official Development Assistant
ONATRACOM	Office National de Transport en Commun
OPEC	Organization of the Petroleum Exporting Countries
PIP	Public Investment Plan
PRSP	Poverty Reduction Strategy Paper
UNDP	United Nation Development Program
VAT	Value Added Tax
WB	World Bank

Summary

The Republic of Rwanda (hereinafter referred to as “Rwanda”) is a landlocked country located in the center of Africa. The country counts on a population of approximately 8.1 million, and a total land area of around 24,700 km². Rwanda is popularly known as “the land of a thousand hills,” due to its topographic character: A hilly area at near 1,500 meters above sea level scattered with lakes and marshes. Bus transport system is the only public transportation means in Rwanda, as the country counts on no railway network. Improving bus route networks connecting local cities has been a priority in order to stimulate inter-regional exchanges, promote job creation and avoid isolation of rural areas.

The Government of Rwanda considers reconstruction from the civil conflict to be an immediate and unavoidable task. This is particularly clear at the national plan for reconstruction and development based on the “Public Investment Program” strategy elaborated in 1996, the “VISION 2020” to set economic goals for the 2000-2020 period, and the “Full-Poverty Reduction Strategy Paper” (F-PRSP) drafted in 2002.

Six broad areas have been identified where action is to be taken on a priority basis in relation with the PRSP. Ranked by order of importance, those are: (a) human development, (b) economic infrastructure and ICT, (c) rural development and agricultural transformation, (d) good governance, (e) private sector development, and (f) institutional capacity building.

The nationwide public bus service is to provide the only rural transportation service in Rwanda. In other words, if public transportation is further substantiated through the Project which aims at maintaining and strengthening public bus routes as a transporting means necessary for the sustainable development and exchanges between regions and the economy, this will not only contribute to economic growth in rural areas through regional development (again, a priority in the PRSP and the VISION 2020), but will also facilitate refugees’ repatriation and post-civil conflict reconstruction.

The public transportation organizations currently in place in Rwanda include, in the public sector, the *Office National des Transports en Commun* (ONATRACOM), and 15 private-sector bus companies.

ONATRACOM provides public transportation services connecting paved inter-city trunk roads and un-paved inter-rural roads. 266 units of large buses have been procured to ONATRACOM

by Japan's grant aid projects in 1981, 1985, 1987 and 1992. The number of large buses owned by ONATRACOM exceeded 300 units before 1994. However, most of those large buses were destroyed or lost during the civil conflict in 1994.

After the civil conflict, 30 large buses were provided to ONATRACOM by Japan's grant aid project in 1998. However, as only 60 large buses are currently in operation, it can be concluded that ONATRACOM has not yet recovered the condition and level of its bus operation network and system achieved before the civil conflict.

On the other hand, private-sector bus companies are using wagon-type minibuses with an average 18-seat capacity. However, this service is limited to Kigali City, with a large demand, and paved trunk roads connecting Kigali with some rural cities. Further, since minibuses in private companies do not depart unless the seats are filled, and since there is no specific operation schedule, it goes without saying that the system does not fully meet the level of convenience and time efficiency provided by public services.

Economic growth in Rwanda has achieved an average 6% growth in recent years. However the level of the economic growth in rural areas leaves still much to be desired. Current bus operation networks should be recovered urgently for all areas in Rwanda to retrieve, at least, the situation before the start of the civil conflict.

Within this context, in November 2001, the Government of Rwanda requested a Japanese grant aid for the procurement of buses and workshop equipments necessary to solve the problems originated by the deteriorating public transportation system in the country.

In response to the above-mentioned request, Japan International Cooperation Agency (JICA) dispatched a preliminary study team to Rwanda from June to July 2004. Furthermore, the implementation of the grant aid scheme was confirmed to be appropriate as a result of the investigations pertaining to the situation within agencies in Rwanda in charge of the project implementation after the 1994 civil conflict. Such an evaluation included, among other, equipment maintenance system, conditions of the equipment owned, technical level and budget, ONATRACOM privatization possibilities and relevance of the components requested.

The Government of Japan decided to implement a Basic Design Study based on the findings of the preliminary study, and the JICA carried out the Basic Design Study from January to July 2005.

The Basic Design Study Team was dispatched between February and beginning of March 2005 in order to carry out a study on operations, management and maintenance conditions at ONATRACOM in Rwanda, road conditions for bus routes and equipment procurement conditions, as well as to collect data. The said Basic Design and Implementation Plan were made based on the results of the field survey, after returning to Japan. The project draft report was submitted and explained to the Rwandan counterpart at the beginning of June 2005. The Rwandan side agreed and fully accepted the components of the requested Japanese assistance.

The objective of the Project is to restore the bus service system before the civil conflict through the procurement of buses and workshop equipments at ONATRACOM in order to address problems faced when most buses obtained through the assistance of Japan broke down or were lost due to the 1994 civil conflict, the rapid deterioration of the public transportation services, as well as to improve the public transportation capacity as the only public transportation organization in Rwanda.

Although the initial components requested by Rwanda were 70 large buses, 10 medium buses, 1 service truck, 1 set of workshop equipments, 1 set of spare parts and training for maintenance mechanics and staff for transport network planning, an additional request of 13 medium buses was made at the time of the preliminary study.

Although ONATRACOM currently offers 86 service routes in the present time schedule, since only 60 buses are in operation, it is very difficult to provide services for all 73 routes. In order to provide daily services for the service routes existing prior to the civil conflict, at least 116 large buses are necessary. However, based on the current maintenance scheme, transport network planning and operation at ONATRACOM system, even if more than twice as many large buses are introduced, the maintenance and operation is judged to be difficult. Consequently, the Project will set the required number of buses under the following conditions: (a) All bus service routes should be restored to the situation existing before the civil conflict; and (b) the frequency of bus service should not be less than the current one (approximately 3 times a week).

With respect to bus specifications, in the case of Japanese products (vehicles procured from Japan), at the current time all vehicles' body types are of a single-body design. It is, therefore, difficult to carry out repair work locally. Engines and chassis required for the Project will consist of Japanese products, whereas, vehicle body types will be a frame structure manufactured in neighboring countries (Kenya, likely) for easy repair and procurement of spare parts.

Quality and durability are required for the service truck. This is because service truck is procured for the purpose of rescue in cases of buses' breakdown or accidents. Workshop equipment should suit the type for Japanese chassis and engines. Service truck and workshop equipment will be Japanese in consideration of their quality and durability.

A two-year portion of spare parts for large and medium buses will be necessary, whereas a three-year portion of spare parts for the service truck will be included, because it is a special vehicle and will be operated under severe conditions. Irregular consumables such as tires and batteries can be procured locally and will not be included, therefore, in the Project.

In accordance with the above-mentioned design policy, the components of the equipment to be procured under the Project decided are described below. The components of the equipment are the same as the items requested by Rwanda.

Specifications and Quantity of Equipment to be Procured

Equipment Name and Specifications	Quantity
1. Large Buses	70 units
1.1 Large Buses: 60 seats (service routes connecting inter-cities) (1) Vehicle Type Bus Specifications: 60 seats, left handling, front engine, over 15.5 tons of total vehicle weight and 230 horsepowers of engine output (2) Spare Parts	(18 units) 1 set
1.2 Large Buses: 45 seats with compartment luggage (service routes in rural areas) (1) Vehicle Type Bus Specifications: 45 seats, left handling, front engine, over 15.5 tons of total vehicle weight and 230 horsepowers of engine output (2) Spare Parts	(52 units) 1 set
2. Medium Buses (1) Vehicle Type Bus Specifications: 25 seats, left handling, front engine, over 7 tons of total vehicle weight and 110 horsepowers of engine output (2) Spare Parts	23 units 1 set
3. Service Truck (towing vehicle with winch and boom) Truck Specifications: 4 X 4, left handling, front engine, over 8 tons of total vehicle weight and 200 horsepowers of engine output	1 unit
4. Workshop Equipments <ul style="list-style-type: none"> • Tool set for vehicles • Maintenance equipments for body repair and metal processing • Maintenance equipments for engine adjustment • Maintenance equipments for suspension repair • Maintenance equipments for oil exchange • Various maintenance equipments for cleaning • Maintenance equipments for electrical system repair • Maintenance equipments for brakes repair • Maintenance equipments for tire repair 	1 set

The total cost necessary to implement the Project in accordance with the Japanese grant aid is estimated to be ¥ 934 million yen (of those, ¥ 922 million will be received by the Japanese side and ¥ 12 million shall be financed by the Rwandan side). Major undertakings on the Rwandan side will be (a) security of personnel necessary for operation and maintenance of bus equipment to be newly procured under the Project, and (b) training expenses for guidance on operations of the equipment to be procured for maintenance personnel.

The work period of the Project is estimated to be 23 months in total (8 months for the detailed design including tendering, and 15 months necessary for equipment procurement).

The following direct effects can be expected through the implementation of the Project and the subsequent maintenance work to be conducted by the Government of Rwanda:

- (a) The existing number of buses will be increased from 60 to 153 units; the number of service routes will be increased from 73 to 162 routes, and the distance of service routes will be increased from 7,520 to 14,850 kms through the implementation of the Project. Subsequently, the number of passengers (around 3.4 million users in 2004) will increase; and areas where access to buses is possible will be expanded.
- (b) Revenues will increase due to the procurement of buses, and business management at ONATRACOM will be improved.

The following indirect effects can be expected through the implementation of the Project:

- (a) Local and regional economies will be revitalized through the improvement in public transportation capacity in Rwanda.
- (b) Accessibility to public facilities and markets, etc., such as hospitals, clinics, or schools, will be improved by restoring the bus routes before the civil conflict, with which will result in a likely improvement of basic human needs (BHN) for local residents.

If buses that can be used at ONATRACOM in Rwanda are increased through the implementation of the Project, the public transportation capacity within Rwanda will be improved, and the above-mentioned positive effects can be expected. At the same time, the Project will contribute extensively to economic growth in rural areas through the Rwandan regional development, the repatriation of refugees, and the post war reconstruction and improvement in BHN for people in Rwanda. The urgency is high, and the Project is extremely significant, since it is the first example of Japanese assistance through Japan's grant aid scheme since the end of the civil conflict.

Concerning the implementation of the Project, ONATRACOM will be able to operate and maintain appropriately new bus equipment procured in the future. ONATRACOM should secure the personnel and budget necessary for operation and maintenance, and also improve the technical level of operation and maintenance schemes, by implementing Japan's technical cooperation programs covering technical guidance on operational management workshops, transport network planning and service management, among other.

The Project for Rehabilitation of the Public Transport in the Republic of Rwanda
Basic Design Study Report

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Chapter 1
BACKGROUND OF THE PROJECT

Chapter 1 Background of the Project

(1) Background and Progress of the Request

Bus transport system is the only public transportation means in Rwanda, as the country counts on no railway network. Improving bus route networks connecting local cities has been a priority in order to stimulate inter-regional exchanges, promote job creation and avoid isolation of rural areas.

The public transportation organizations currently in place in Rwanda include, in the public sector, the *Office National des Transports en Commun* (ONATRACOM), and 15 private-sector bus companies.

ONATRACOM provides public transportation services connecting paved inter-city trunk roads and un-paved inter-rural roads. 266 units of large buses have been procured to ONATRACOM by Japan's grant aid projects in 1981, 1985, 1987 and 1992. The number of large buses owned by ONATRACOM exceeded 300 units before 1994. However, most of those large buses were destroyed or lost during the civil conflict in 1994.

After the civil conflict, 30 large buses were provided to ONATRACOM by Japan's grant aid project in 1998. However, as only 60 large buses are currently in operation, it can be concluded that ONATRACOM has not yet recovered the condition and level of its bus operation network and system achieved before the civil conflict.

On the other hand, private-sector bus companies are using wagon-type minibuses with an average 18-seat capacity. However, this service is limited to Kigali City, with a large demand, and paved trunk roads connecting Kigali with some rural cities. Further, since minibuses in private companies do not depart unless the seats are filled, and since there is no specific operation schedule, it goes without saying that the system does not fully meet the level of convenience and time efficiency provided by public services.

Economic growth in Rwanda has achieved an average 6% growth in recent years. However the level of the economic growth in rural areas leaves still much to be desired. Current bus operation networks should be recovered urgently for all areas in Rwanda to retrieve, at least, the situation before the start of the civil conflict.

Within this context, in November 2001, the Government of Rwanda requested a Japanese grant aid for the procurement of buses and workshop equipments necessary to solve the problems

originated by the deteriorating public transportation system in the country.

(2) Outline of the Request

The components requested by Rwanda pertaining to the Rwandan public transportation improvements are described as follows:

Table 1-1: Components Requested by Rwanda

Components Requested by Rwanda
Requested Components (November 2001)
(1) Large Buses: 70 units (2) Medium Buses: 10 units (3) Service Truck: 1 unit (4) Spare Parts: 1 set (approximately 10% of vehicle prices) (5) Workshop Equipment: 1 set (6) Training for maintenance and service planning staff
Additional Request (June 2004): A the time of the preparatory study on public transportation improvement plan
An additional request for 13 medium buses was made, so that the requested number of medium buses is 23 units.

Chapter 2
CONTENTS OF THE PROJECT

Chapter 2. Contents of the Project

2-1. Basic Concept of the Project

2-1-1. Overall Purpose of the Project

After the civil conflict in 1994, the Government of Rwanda introduced the “Poverty Reduction Strategy Paper” (PRSP) and the mid-term development plan “Vision 2020” for the purpose of reconstruction of the regions affected. The areas of priority of the PRSP are: (a) rural development and agricultural transformation, (b) human resources development, (c) economic infrastructure, (d) good governance, (e) private sector development, and (f) institutional capacity building. Since the primary goal is to create a middle-income nation by 2020, “Vision 2020” underlines the importance of achieving: (a) “good governance” in politics and economy, (b) regional economic reform of secondary and tertiary industries, (c) human resources development, (d) promotion of private sector businesses, (e) regional and international economic integration, and (f) poverty reduction.

Together with the aid support received from other donors, Japan is emphasizing “human resources development” and “regional development” in its assistance to Rwanda.

The Government of Rwanda is pushing ahead with its decentralization policy and gradually reducing the central government’s supervisory authority over local public administrations.

Due to its relationship with “regional development,” which is an area of high priority within the Japanese assistance plan for Rwanda, the Project aims at reestablishing the bus transportation system in the capital (Kigali) and other local cities to make it return to its previous capacity as a public transportation system prior to the civil conflict. This is to be done in order to stimulate rural development and improve the operation and maintenance of ONATRACOM (*Office National de Transport en Commun*).

2-1-2. Outline of the Project

Thanks to the Project, 93 buses and trucks (70 large buses, 23 medium buses and 1 service truck) will be procured for the purpose of achieving the above-mentioned goal of reestablishing the bus transportation system between the capital (Kigali) and other cities, and between local cities. As it has been previously stated, the purpose is to achieve again a capacity similar to the one enjoyed before the civil conflict, while improving maintenance levels at ONATRACOM services.

The number of bus users and areas where buses can be used will be expanded through the implementation of the Project, by increasing the number of routes and by allocating buses in

local cities. Improvements in accessibility will contribute to shorten travel time, stimulate economic growth in rural areas, and promote the return of refugees and post civil conflict reconstruction. Approximately 8.1 million people in 12 provinces nationwide will be directly and indirectly concerned, while becoming able to enjoy a level of service similar as the one provided prior to the civil conflict.

In addition to the procurement of buses, technical guidance on transport network operation, repair and maintenance of vehicles will be provided to headquarters and local branch offices of ONATRACOM. Furthermore, operation and maintenance programs at ONATRACOM will be improved. As a result of this, the public service as a prerequisite to a mass transit system is expected to improve, particularly in the areas of safety and reliability.

Additionally, a further effect for the Project can be expected by securing an organization and a technological level that can flexibly match with the increase in the procurement of new buses and the decrease of scrapped ones. Similar considerations may be made pertaining to the dispatching of experts in transport network planning and management, and the conduction of workshop management support formulated as technical assistance for the Project.

Table 2-1: Requested Japanese Assistance

Type	Components
Procurement of Buses and Spare Parts	70 large buses (60-seat) and 23 medium-size buses (25-seat)
Procurement of Service Truck and Spare Parts	1 service truck with a wrecker
Procurement of Workshop Equipment	1 set of workshop equipment for improving maintenance at Kigali Headquarters and local branch offices

2-2. Basic Design of the Requested Japanese Assistance

2-2-1. Design Policy

(1) Basic Policy

(1) –1. Scope of Assistance

The Project will procure buses necessary for improvement of public bus transportation capacity between urban and local cities and among rural cities. Similarly, a rescue vehicle (service truck) will be provided to deal with poor road conditions, and spare parts and maintenance equipment will be made available for the purpose of local development and regional revitalization in Rwanda.

In order for equipment to be procured under the Project to be appropriately used as scheduled, the Project will also provide cooperation on operation and maintenance methods of ONATRACOM in Rwanda. The equipment to be procured under the Project will be maintained by ONATRACOM Headquarters in Kigali and local branch offices.

(1)-2. Estimation of the Number of Buses to be Procured

With respect to the number of buses to be procured, large and medium-size buses will be allocated based on the number used before the civil conflict as planned by ONATRACOM. Medium-size buses will be allocated for either narrow width bus routes where it is difficult to operate large buses or short distance bus routes connecting rural areas.

The required number of buses will be provided in consideration of the number of units to be scrapped in 2006 and 2007, as well as the number of units necessary for implementing services, as scheduled in the current bus operation schedule.

(1)-3. Maintenance

Since spare parts and workshop equipments owned by ONATRACOM should be standard-type or higher than those of neighboring countries, a minimum quantity will be owned for the purpose of maintaining and managing the existing equipment. After procuring the equipment under the Project, it will be important for local branch offices to manage these from the viewpoint of rural development, due to an increase in allocation of buses at local branches. Spare parts and workshop equipments now owned by local branch offices are insufficient and are currently underused. Consequently, spare parts and repair equipment necessary for appropriate maintenance of buses to be procured will be included under the Project.

(2) Natural Conditions

(2)-1. Topography

Also known as the “Land of a Thousand Hills,” the entire nation of Rwanda is rugged and hilly, and its average altitude is 1,600m. Therefore, bus equipment to be selected will require engines capable of challenging such terrain and highland environment.

(2)-2. Road Conditions

Eighty percentage (80%) of the roads on which the target equipment will be used are unpaved. It is here to be considered the clear difference between dry and rainy seasons in the region. Furthermore, since many roads are located in rough hilly areas and have many

curves, vehicle design (chassis, suspension and engine) should be durable enough to withstand the current road surface conditions.

(3) Socio-Economic Conditions

Only 10 years have elapsed since Rwanda's civil conflict ended in 1994. A government budget was allocated to make it possible for refugees to return to their homes and rebuild settlements. National stability, including rural stabilization and development aspects, is considered to be a top priority. However, agricultural production, a valuable source of foreign currency, has yet to reach pre-civil conflict levels. Improvements for the revitalization of Rwanda are dependent on overseas aid. Within these circumstances, the Project will cover equipment that does not create a maintenance burden for ONATRACOM.

(4) Procurement Conditions

Since traffic in Rwanda is on the right side, left-hand drive vehicles will be procured. Buses furnished at ONATRACOM during the past few years were Japanese vehicles (manufactured and assembled in Japan). Recently, chassis and engines were manufactured in Japan, while bus bodies have been manufactured in neighboring Kenya.

Recently, buses manufactured in Japan incorporate the bus body to the chassis for achieving strength, comfortable ride and lighter weight. Recently Japanese manufactured buses emphasizing a comfortable driving have difficulties in meeting standards of durability to face Rwanda's local conditions, that is to say, to be operated on poor road conditions and mountainous routes.

Consequently, Japanese trucks with chassis of high reliability and easy maintenance will be procured.

Bus bodies will be procured from Kenya and other countries, due to traffic regulations and the high reliability and durability of the parts manufactured in such places.

ONATRACOM is also strongly requesting highly reliable Japanese chassis and Kenyan bodies at this time. The objective of the Project is to restore the bus service system up to the level achieved before the civil conflict through the procurement of buses and workshop equipments at ONATRACOM. This would address the problems faced when most buses obtained through the assistance of Japan broke down or were lost due to the 1994 civil conflict, as well as the rapid deterioration of the public transportation services. Improving public

transportation capacity is a top priority, as it constitutes the only transportation organization covering all Rwanda's territory.

(5) Operation and Maintenance Competency of the Implementation Agency

The personnel of workshops at ONATRACOM periodically dismantle, repair and assemble bus engines. Therefore, it may be claimed that they count on sufficient maintenance skills. However, since the equipment to be procured under the Project will be concentrated in rural areas, the operation plan or equipment arrangement and maintenance plan are to be changed significantly. For smooth correspondence, guidance will be provided in relation to transfer of know-how on operation and maintenance methods.

(6) Scope and Grade Setting of the Equipment

(6)-1. Buses

Equipment to be procured under the Project will be related to specifications corresponding to the traffic and road conditions in Rwanda. Competitiveness of specifications at the time of tendering should be thus sufficiently secured.

Large buses with 60 seats are allocated to operation routes connecting Kigali City with other regions. Large buses with 45 seats with compartment luggage space are allocated to operation routes for rural areas. Seat-type large buses with 60 seats are comfortable and count on overhead compartment shelves covered with plastic covers. However the seat-type large buses with 45 seats, as well as other medium buses, to be operated in rural areas should count on plastic seats, as the currently existing ones, to achieve easy maintenance and prevent them from breaking

The entrance door should be wide for passengers. However, in this Project, entrance door width is the same as in currently used buses in order to avoid free ride.

Table 2-2. Components of Required Buses

Bus Route Characteristics	Road Conditions	Type of Bus to be Applied
Capital to Major Local Cities	Majority of roads are paved trunk roads.	Large buses (60-seat)
Major Local Cities to Rural Areas	Majority of roads are unpaved rural roads.	Large buses (60-seat and compartment luggage space)
Major Local Cities to Rural Areas	Routes of narrow width where large buses have difficulties in being operated (Majority of roads are unpaved rural roads.)	Medium-size buses (25-seat)

(6)-2. Service Truck

Since buses frequently cannot be operated due to bad road conditions, accidents, mechanical troubles, or during the rainy season, rescue can be difficult depending on the road surface conditions. Therefore, in due consideration of the topography, road width and surface conditions, a towing vehicle with a winch larger than regular vehicles will be provided.

(6)-3. Workshop Equipments

Since over 80% of vehicles will be deployed in rural areas, and only a minimum number of hand tools are presently owned by local branch office workshops, the minimum amount of necessary maintenance equipment will be arranged at local branch offices in order to maintain the buses to be procured. As Headquarters in Kigali are the final base for heavy servicing (maintenance), various adjustment instruments and maintenance tools that are presently insufficient will be included in the Project.

(6)-4. Spare Parts

A two-year portion of spare parts for large and medium buses will be necessary, while a three-year portion of spare parts for the service truck will be included. This is because it is a special vehicle and will be operated under severe conditions. Irregular consumables, such as tires and batteries, can be procured locally and, therefore, will not be included in the Project.

(6)-5. Related Laws and Regulations

In the case of carrying out the Basic Design under the Project, since independent laws and regulations have not yet been prepared in Rwanda, the following international and Japanese standards shall be applied.

Japan Industrial Standards (JIS)

Japan Electrotechnical Committee (JEC)

Standards of the Japan Electrical Manufacturer's Association (JEM)

International Electrotechnical Commission (IEC)

(7) Procurement and Work Schedule

(7)-1. Spare Parts Procurement and After Service

In respect of after service for buses to be procured under the Project, on the condition that the manufacturer delivering bus chassis will assign an agent locally in Kigali, special consideration will be given for rapid correspondence and technical support so that ONATRACOM can order spare parts or request repair work.

(7)-2. Transportation Routes, Customs Clearance at Unloading Port and Transportation Time

The engines and chassis of buses, service truck body, and other spare parts and maintenance tools to be procured under the Project will be transported by sea from Japan and unloaded at the Port of Mombassa in Kenya. After customs clearance, the vehicles will be driven, and spare parts and maintenance tools will be transported by trailer to their final destination, Kigali, via Nairobi, Kenya, through Uganda.

The frequency in operation of container ships from Japan to the Port of Mombassa is once a week. Ship transportation exclusively for vehicles takes place once a month. Required total time is about one month.

Total distance of overland transportation from the Port of Mombassa to Kigali in Rwanda is approximately 1,670 kilometers. Of this, the distance between the Port of Mombassa and Nairobi is near 485 kilometers; and the distance from Nairobi to the final point of Kigali via Kampala, Uganda, is about 1,185 kilometers. Required number of days for overland transportation, including customs clearance, is estimated to be around one week from the Port of Mombassa to Nairobi, and approximately 10 days from Nairobi to Kigali.

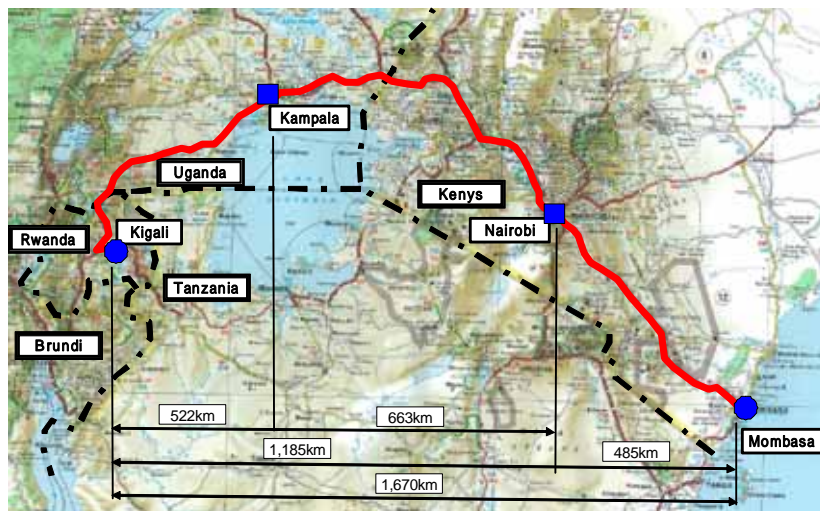


Fig. 2.1. Transportation Route for Procurement

(7)-3. Procurement Period

Under the Project, engines and bus chassis will be procured from Japan, after which a knock down (KD) production system will be implemented in nations neighboring Rwanda. Due to the large quantity of units (70 large and 23 medium-size buses), it is difficult to produce all of them at once from vehicle manufacturers. Therefore, a two-phase work schedule will be designed.

2-2-2. Basic Plan (Equipment Plan)

(1) Overall Plan

Required equipment for the Project is determined in consideration of the following procedures:

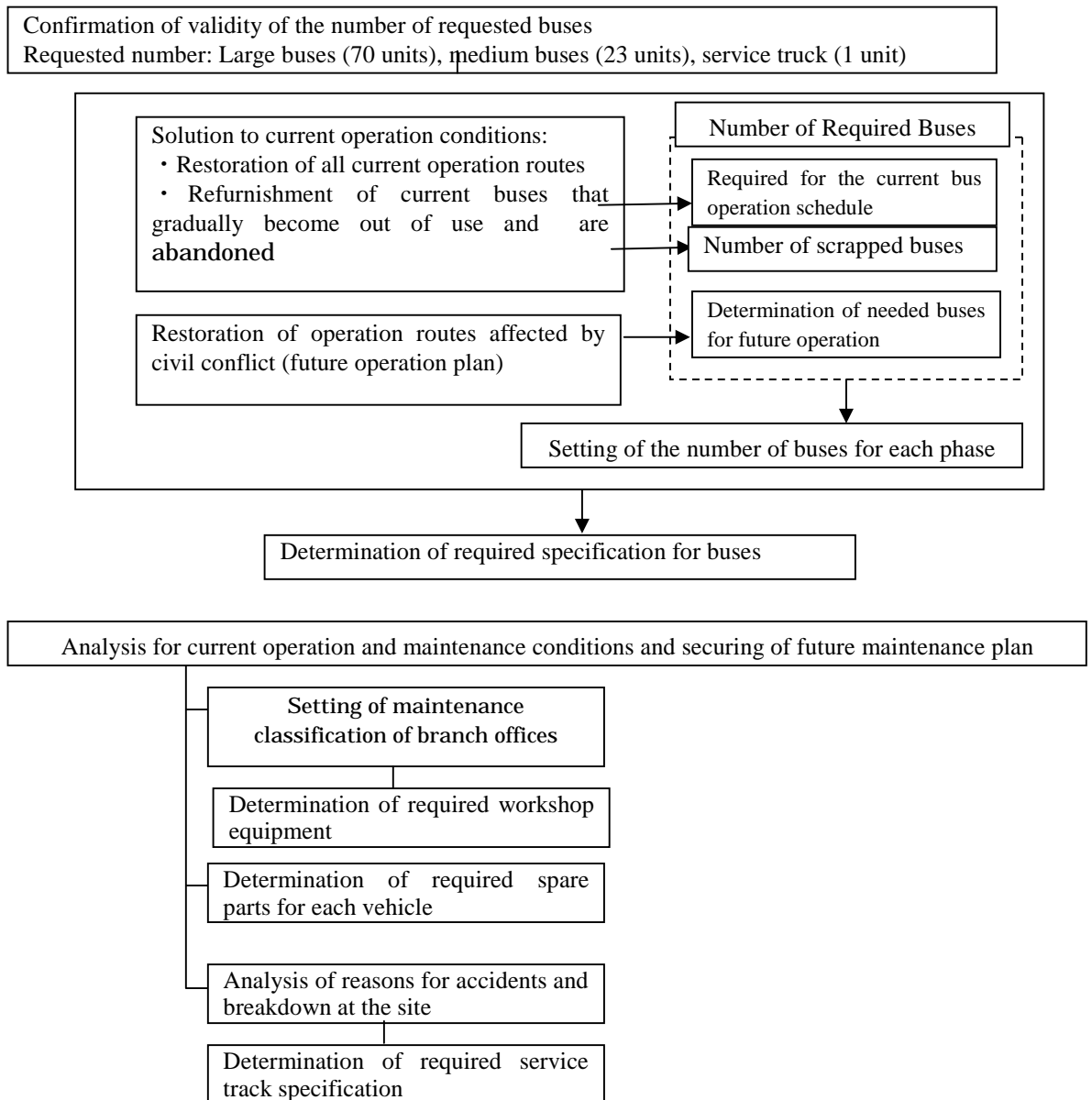


Fig.2-2. Procedure for equipment specification

(2) Equipment Plan

(2)-1. Required Number of Buses

(2)-1-1. Basic principles on setting required number of buses

Basic principles on the establishment of the required number of buses are as follows:

- (a) First, to rebuild the current service routes.
- (b) To take the number of buses to be scrapped in the future into account.
- (c) To set the number of buses necessary for the future service routes.

Although daily service on routes operated before the civil conflict should be the goal, as planned by ONATRACOM, service cannot be provided as scheduled due to the insufficient number of buses to serve all concerned service routes at the current time. Therefore, the planning will satisfy the following:

- a) All routes operated prior to the civil conflict will be in operation.
- b) Service frequency will not be lower than the current level.

Rwanda is a small country and its population density is extremely high. Most areas, except for national parks, are populated.

Under these circumstances, the upgrading of conditions and areas where service is not provided, despite the existence of service routes, is expected to contribute to the improvement in services for residents in rural Rwanda.



Fig. 2-3. Future Service Route Network

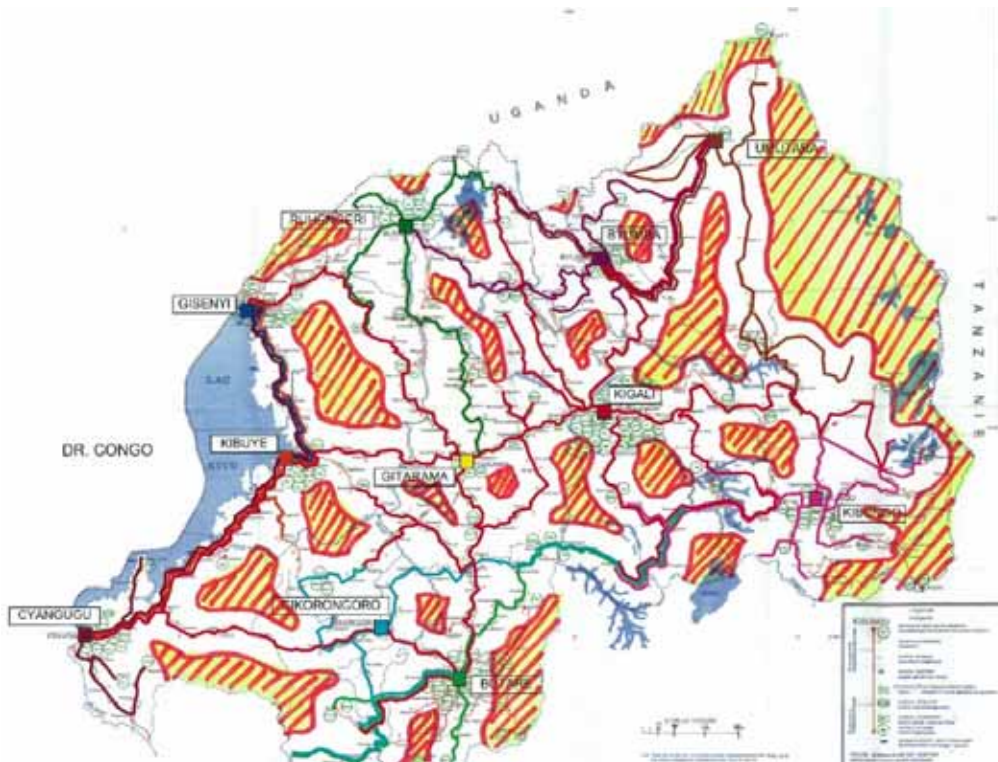


Fig.2-4. Bus Service Zones in Current Routes
(Meshed parts are areas where service has not yet been provided.)

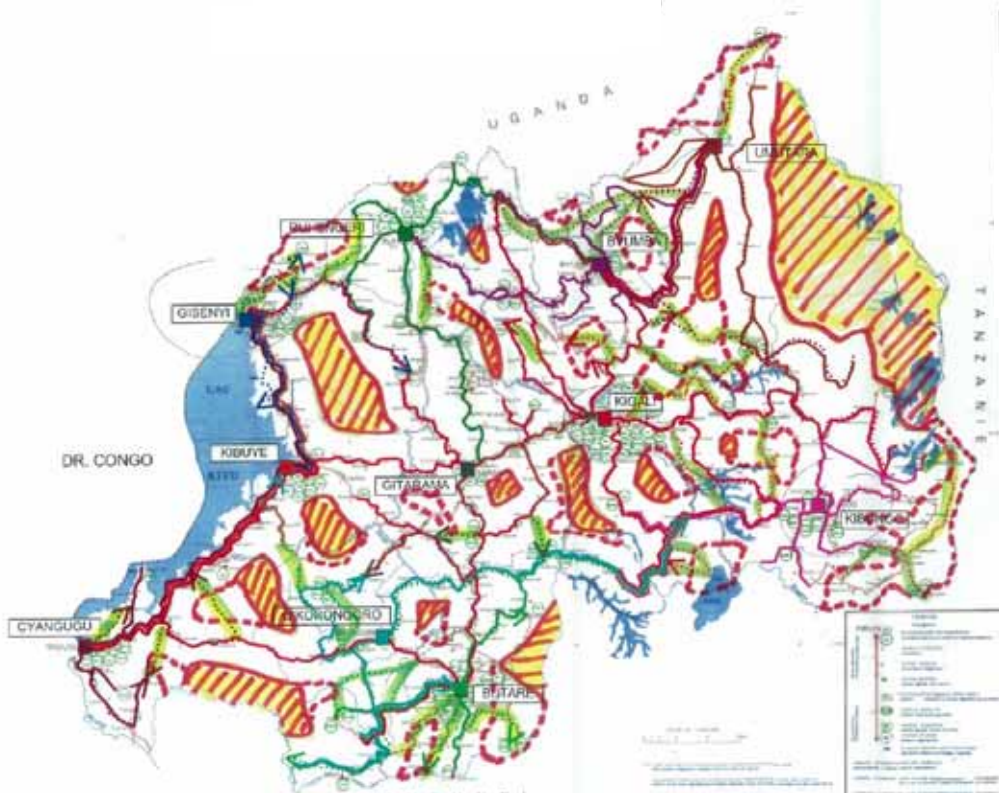


Fig.2-5. Bus Service Zones in Future Service Routes
(Meshed parts are areas where service has not yet been provided.)

(2)-1-2. Estimated Number of Buses Required

(2)-1-2-1. Number of Buses Owned (by Year)

Although ONATRACOM presently owns 69 large buses, only 60 are in operation.

Large buses manufactured in 1989 (Japan’s grant aid scheme): 2

Large buses manufactured in 1993 (Japan’s grant aid scheme): 7

Large buses manufactured in 1998 (Japan’s grant aid scheme): 25

Large buses manufactured in 2003 (funded by Rwanda): 26

The number of years under consideration is 15, based on the condition of buses owned as of 2005 and loss resulting from past accidents, etc. In connection with this, the number of remaining buses in the year of introduction is calculated.

The ratio of remaining buses is estimated to be 85% after 5 years since the buses were procured, and 15% after 15 years have elapsed.

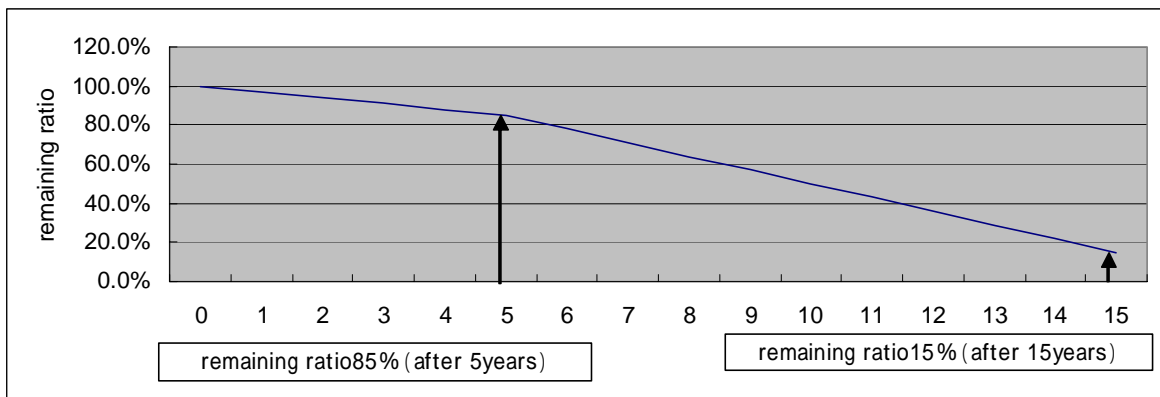


Fig. 2-6. Remaining Ratio

The calculation for the remaining number of buses at the time of introduction by year is shown as follows:

Table 2-3. Number of remaining number of buses

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	
Large bus (procured in 1989)	1989	4	2	0																
Number of years elapsed		15																		
Large bus (procured in 1993)	1993	9	7	3	2	1	0													
Number of years elapsed		11	12	13	14	15														
Large bus (procured in 1998)	1998	27	25	17	15	14	12	10	8	6	4	0	0	0	0	0	0	0	0	0
Number of years elapsed		6	7	8	9	10	11	12	13	14	15									
Large bus (procured in 2003)	2003	29	26	26	26	25	23	21	19	17	15	12	10	8	6	4	0	0	0	0
Number of years elapsed		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15				
Large bus (procured in 2007)	2007	0	0	0	70	68	66	64	62	60	55	50	45	40	35	30	25	20	15	11
Number of years elapsed		0	0	0	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Large bus Total		69	60	46	113	107	100	94	88	82	73	62	55	48	41	34	25	20	15	11
Medium bus (procured in 2007)	2007	0	0	0	23	22	22	21	20	20	18	16	15	13	12	10	8	7	5	3
Number of years elapsed		0	0	0	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Large + Medium Bus Total		69	60	46	136	130	122	115	108	102	91	79	70	61	53	44	33	27	20	14

60

43

-17
No. of lack of buses

17 existing buses are abandoned in 2007 when the bus machine parts are not reinforced in the present operation route.(17 large buses are insufficient.)

(2)-1-2-2. Restoration of all operation routes in current operation schedule

Frequency of current operation schedule is planned 3 times per week. However, actual frequency is about twice a week, due to lack of buses in operation.

A number of 19 large buses are necessary to cope with the said operation schedule, which represents a frequency of 3 times per week.

Table 2-4. Number of Required Buses for Current Bus Operation Schedule

Branch Office	No. of Buses	Operated Buses	Additional required buses for existing operation schedule	Scrapped buses by 2007
Butare	4	3	2	
Ruhengeri	4	4	3	
Byumba	4	3	1	
Umutara	2	2	1	
Kibuye	3	3	1	
Gikongoro	3	3	3	
Cyangugu	4	4	1	
Kibungo	4	4	0	
Gisenyi	3	3	1	
Kigari	38	31	6	
	69	60	19	17

79 36
 No of required buses for existing bus operation schedule Lack of Buses

(2)-1-2-3. Number of buses needed for future operation schedule

Although ONATRACOM provides its services in accordance with the current service plan, according to the service records available at each local branch office, the service is not being implemented on some bus routes as scheduled. This is due to the fact that the service has been reduced for insufficient number of buses available at each local branch office, as well as traffic difficulties associated with the deterioration of road surfaces during the rainy season, etc. At least 19 large buses must be introduced in order to provide the level of service scheduled in the current service plan.

(2)-1-2-4. Required number of buses

In the case of arranging the number of buses in accordance with the above-mentioned basic principles, at least 70 buses are deemed to be necessary in total, including 17 units to be scrapped in the future, 19 units for reconstruction of the existing routes, and 34 units for future service routes. The figure of 93 buses requested by ONATRACOM is not sufficient for daily operation of future operation schedule.

However, it is judged that the content of the request is appropriate for maintaining the current condition and restoring the operation route to levels similar to those enjoyed before the civil conflict.

Table 2-5. Result pertaining to Required Number of Buses

	Number of scrapped buses within year 2007	Required number of buses for current operation schedule	Required number of buses for future operations schedule		Required number
			Large buses	Medium buses	
Daily operation in future operation schedule	17	19	57	23	116
Frequency to be superior to current operation in future operation schedule	17	19	34	23	93

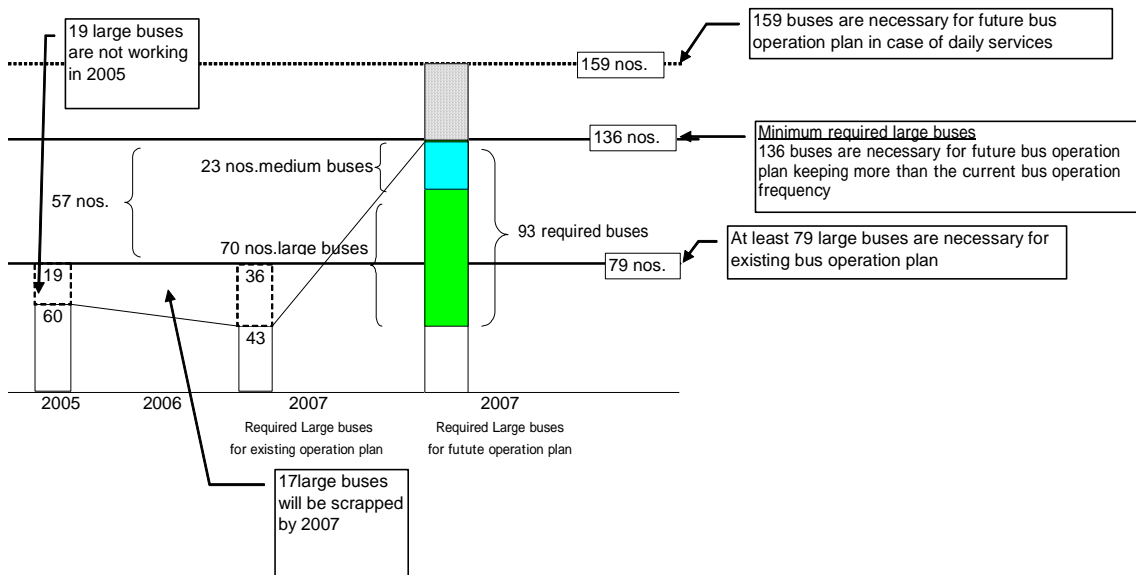


Fig.2-7. Number of Required Buses in 2007

(2)-1-3. Phasing

Based on the maintenance capability and personnel arrangement at ONATRACOM, in Phase 1, 42 large buses will be allocated to Kigali Headquarters, where heavy and medium servicing is implemented, and local branch offices in Butare, Kibungo and Gisenyi.

In Phase 2, 28 large buses will be allocated to local branch offices in Byumba, Chyangugu, Gikongoro, Kibuye, Ruhengeri, Umutara and Gitarama, where light servicing is carried out.

Table 2-6. Bus Arrangement Plan

Offices		Large Bus					Medium bus procured in Term I	Term I procured by 2006	Term II procured by 2007	Total No. of Procured Bus
		60 seats	45 seats	Total	Term I	Term II				
Kigali Headquarter	C	14	12	26	26	0	2	28	0	28
Butare	B	2	5	7	7	0	3	10	0	10
Byumba	A	0	5	5	0	5	2	2	5	7
Changugu	B	0	3	3	0	3	2	2	3	5
Gikongoro	A	0	6	6	0	6	2	2	6	8
Gisenyi	B	0	5	5	5	0	2	7	0	7
Kibungo	B	0	4	4	4	0	2	6	0	6
Kibuye	A	0	4	4	0	4	2	2	4	6
Ruhengeri	A	2	4	6	0	6	2	2	6	8
Umutara	A	0	3	3	0	3	2	2	3	5
Gitarama	A	0	1	1	0	1	2	2	1	3
Total		18	52	70	42	28	23	65	28	93
					70			93		

Table2-7. Number of buses per year

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Large Bus (procured in 1989)	4	2	0															
yaer	15																	
Large Bus (procured in 1993)	9	7	3	2	1	0												
yaer	11	12	13	14	15													
Large Bus (procured in 1998)	27	25	17	15	14	12	10	8	6	4	0	0	0	0	0	0	0	0
yaer	6	7	8	9	10	11	12	13	14	15								
Large Bus (procured in 2003)	29	26	26	26	25	23	21	19	17	15	12	10	8	6	4	0	0	0
yaer	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15			
	69	60	46	43	40	34	30	26	22	19	12	10	8	6	4	0	0	0
Large bus (Term I:2006)			42	41	40	39	37	36	33	30	27	24	21	19	16	13	10	7
year			0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Large bus (Term II:2007)			0	28	28	27	26	25	24	22	20	18	16	14	13	11	9	7
year			0	0	0	1	2	3	4	5	6	7	8	9	10	11	12	13
	0	0	42	69	68	66	63	61	57	52	47	42	37	33	29	24	19	14
Total No.of Large bus	69	60	88	112	108	100	93	87	79	71	59	52	45	39	33	24	19	14
Medium bus (2006)			23	22	22	21	20	20	18	16	15	13	12	10	8	7	5	3
year			0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Total No. of Large and Medium bus	69	60	111	134	129	121	114	107	97	87	74	66	57	49	42	31	24	17

(2)-2. Maintenance Plan

(2)-2-1. Annual Maintenance Cost

Maintenance cost can be roughly classified into routine inspection cost, general servicing cost and consumables cost. Based on the 2005 forecast, the cost for the year 2007, when the Project is scheduled to start, is estimated to be 1.78 times, after which the cost will be expected to increase approximately 5 to 10% annually. (Inflation figures are not included, and current values are considered in the following tables.)

Table 2-8. Estimated Annual Maintenance Cost

Year	2005	2006	2007	2008	2009
Periodic Maintenance	87,978,000	150,925,564	184,916,662	177,851,360	166,563,114
Existing Buses	87,978,000	67,860,364	62,889,607	57,918,850	50,191,449
Procured Large buses by Term I	0	61,584,600	60,118,300	58,652,000	57,185,700
Procured Large buses by Term II	0	0	41,056,400	41,056,400	39,590,100
Procured Medium buses by the Project	0	20,941,500	20,313,255	19,685,010	19,056,765
Procured Service truck with wrecker by the Project	0	539,100	539,100	539,100	539,100
Routine Maintenance	26,393,400	24,511,369	29,016,768	33,312,712	36,352,263
Existing Buses	26,393,400	20,358,109	18,866,882	17,375,655	15,057,435
Procured Large buses by Term I	0	3,079,230	6,011,830	8,797,800	11,437,140
Procured Large buses by Term II	0	0	2,052,820	4,105,640	5,938,515
Procured Medium buses by the Project	0	1,047,075	2,031,326	2,952,752	3,811,353
Procured Service truck with wrecker by the Project	0	26,955	53,910	80,865	107,820
Consumable Items (Buttery, Tire)	153,600,000	231,890,000	311,844,250	323,943,500	307,082,750
Existing Buses	153,600,000	128,000,000	110,880,000	102,400,000	92,160,000
Procured Large buses by Term I	0	70,560,000	104,960,000	102,400,000	99,840,000
Procured Large buses by Term II	0	0	47,040,000	71,680,000	69,120,000
Procured Medium buses by the Project	0	33,120,000	48,524,250	47,023,500	45,522,750
Procured Service truck with wrecker by the Project	0	210,000	440,000	440,000	440,000
Estimated Annual Maintenance Cost TOTAL	267,971,400	407,326,933	525,777,680	535,107,572	509,998,127

*1: 30% of routine inspection cost

*2: In the case of new vehicles, 5% in the 1st year, 10% in the 2nd year and 15% in the 3rd year

*3: 8 times tires replacement

*4: Once tires replacement

(2)-2-2. Maintenance Scheme

Only light maintenance service is carried out at workshops at local branch offices other than Kigali Headquarters at the current time. Therefore over 90% of maintenance service is conducted at Kigali Headquarters as a maintenance scheme. However, in order to revitalize rural areas, the target equipment will be used for bus operation between cities other than Kigali. Inevitably, three to four times of the current number of buses will be available at local branches. Light servicing will improve current time and economic loss factors. Consequently, local branch offices should carry out maintenance operations to some extent.

However, if uniform operations are conducted at all local branch offices, considering the construction of new plants, a sharp increase in personnel and loss of tools available (investment of materials that are not used for a long period of time) is unrealistic, as a large investment would be necessary to cope with the current balance of income and expenditures. Accordingly, of the ten local branch offices in the country, branch offices that will become the base for key repairing in rural areas will be selected in accordance with the selection criteria below:

At some of the four domestic branch offices, moderate servicing is carried out due to the geographical advantages found (mainly, good accessibility). Therefore, stable management is possible through an increase in services and incomes, and by promoting efficiency of inspection and equipment repair and operation of the.

(Selection criteria)

1. Number of vehicles
2. Lot area
3. Allowable number of vehicles at a workshop (servicing space)
4. Regional balance
5. Distance from Kigali Headquarters

(Repairing Components)

Repairs are classified as light, medium and heavy servicing, as follows:

Table 2-9. Maintenance Grade

A (Light Maintenance)	B (Medium Maintenance)	C (Heavy Maintenance)
Light servicing and periodical inspection and suspension replacement	A + overhaul of brakes and clutch Body work (light welding, etc.)	A + B + transmission overhaul and differential overhaul Engine overhaul and body work
Tools for Light Maintenance (A)	Tools for Medium Maintenance (B)	Tools for Heavy Maintenance (C)
Tool set, jack, routine maintenance tools (oil bucket, tool stand, etc.)	Tool set, tools for break overhaul, electric welding machine, compressor, etc.	Tool set, overhaul equipment for differential, engine, transmission, measurement instrument, washer, etc.

Equipment Layout (Tools)

In relation to repair materials, including the requested materials, tools corresponding to the contents of the operations are classified into materials (tools) pertaining to light, medium and heavy repairing as follows:

Equipment Layout (After 2007)

In accordance with the above-mentioned selection criteria, the repairing components and related materials (layout) by the Headquarters and each branch office are described below:

Table 2-10. Equipment Layout Plan (After 2007)

Branch Office Name	Workshop Area (m ²)	Existing Vehicles	2007 at the time of Project Implementation		Total	Number of Units Allowed (Pit)	Repair Contents	Repair Materials (Tools)
			Large	Medium				
Kigali HQ	11,000.0	23	17 (1 Service Car)	2	42	18	C	C
Butare	835.9	2	10	3	15	4	B	B
Ruhengeri	266.9	3	6	2	11	2	A	A
Byumba	5,000.0	2	6	2	10	2	A	A
Umutara	0	2	4	2	8	0	A	A
Kibuye	1,567.0	2	4	2	8	2	A	A
Gikongoro	0	2	6	2	10	0	A	A
Chyangugu	342.5	3	5	2	10	5	B	B
Kibungo	2,622.0	3	5	3	11	2	B	B
Gisenyi	2,600.0	2	4	2	8	2	B	B
Gitarama		0	4	1	5			
Total		44	71	23	138			

(Simplified Map of Branch Offices for Repair Correspondence)

Based on the above-mentioned plan, Kigali Headquarters in (C) will be the final base to confirm all vehicles, while branch offices in (B) will supplement operations and adjustments for medium servicing of those in (A) depending on the geographical conditions (accessibility). Branch offices in (A) will mainly provide light servicing as in the past.

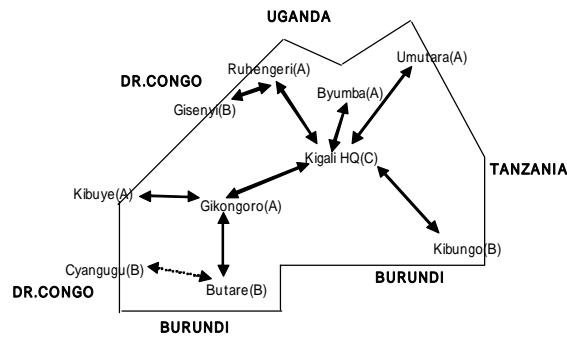


Fig.2-8. ONATRACOM Maintenance System

(Routine Inspections)

It may be stated that, generally speaking, routine inspections are currently carried out as described in the corresponding manual. A simplified table of typical routine inspection items and periods may be described as follows:

Table 2-11. Inspection Items for Large Buses

Routine Inspection Parts (Replacement)	8,000 km or 1 month	24,000 km or 6 months	48,000 km or 1 year
Engine Oil	×	×	×
Filter Oil	×	×	×
Fuel Filter	×	×	×
T/M Oil		×	×
D/F Oil		×	×
Air Cleaner			×
Other parts tightening	C	C	C
Required personnel	2	2	2
Required time			
Existing Equipment	2.5 hours	3.5 hours	4 hours
New Equipment	1.5 hours	3 hours	3.5 hours

Table 2-12. Inspection Items for Medium Buses

Routine Inspection Inspection Parts (Replacement)	6,000 km or 1 month	18,000 km or 6 months	36,000 km or 1 year
Engine Oil	×	×	×
Filter Oil	×	×	×
Fuel Filter	×	×	×
T/M Oil		×	×
D/F Oil		×	×
Air Cleaner			×
Other parts tightening	C	C	C
Required personnel	2	2	2
Required time Existing Equipment New Equipment	1 hour	1.5 hour	2 hours

Table 2-13. Inspection Items for Service Truck

Routine Inspection Inspection Parts (Replacement)	8,000 km or 1 month	24,000 km or 6 months	48,000 km or 1 year
Engine Oil	×	×	×
Filter Oil	×	×	×
Fuel Filter	×	×	×
T/M Oil		×	×
D/F Oil		×	×
Air Cleaner			×
Other parts tightening	C	C	C
Required personnel	2	2	2
Required time Existing Equipment New Equipment	1.5 hour	3 hours	3.5 hours

(2)-3. Equipment Plan

(2)-3-1. Procured Vehicles

a) Bus Vehicles

In relation with buses to be procured under the Project, a ladder type frame chassis will be applied in due consideration of service conditions (poor roads, hilly areas, unpaved roads). In regards to their body, vehicles manufactured in neighboring countries will be selected due to their manufacturing experience and possession of information on local traffic conditions. Vehicle length with less than 12 meters will be adopted. Service capacity will be 60 persons (15-person standing space). Baggage room will be installed on vehicles connecting rural areas. Since the same chassis structure as a 45-person service capacity will be applied, and baggage room (with a door) will be at the back of buses connecting rural towns, medium-sized buses will be selected for their mobility in due consideration of road width and topography. Therefore, vehicle length of approximately 8 meters will be adopted. In this case, the service capacity will be approximately 25 persons.

b) Service Truck

A service car is designed for towing vehicles at local sites due to bad roads, possibilities for accidents or serious breakdown. In due consideration of the topography, road width and cargo space, the vehicle to be adopted will have a margin for loading at traction volume, because the gross weight of the bus is 17 tons maximum, its capacity will be approximately 20 tons. A winch suitable for this will be adopted in due consideration of competitiveness.

c) Gas Emission Standards

Although gas emission regulations have not yet established in Rwanda, the Project will apply the criteria corresponding to EURO 2 standards.

d) Suspension

Since the buses and service car to be procured under the Project will be mainly vehicles for rural and interregional operations on low-quality roads (unpaved and repaired about once every 2 to 3 years), flat springs and shock absorbers should be used for suspensions suitable for poor road conditions. In due consideration of road conditions, the adoption of these manufactured in neighboring countries has been approved due to continuous improvements that have been made in the past.

e) Transmissions

The buses currently available at ONATRACOM are those procured thanks to the past three

Japanese grant aid projects and those purchased through their own funding, all being of manual transmission. Since personnel at the said corporation are familiar with the maintenance of manual transmissions, and there are many low-quality roads and steep grades, the said specifications will be applied, because manual transmission is superior and running fuel cost is excellent. For the service car, a manual transmission with excellent performance will be applied due to its powerful torque on poor roads and on steep grades.

(2)-3-2. Workshop Equipments

Type and quantity of workshop equipments were determined in consideration of the bus arrangement and maintenance grade at each branch office, such as conditions of the workshop yard (number of repair pits and area). The content of the required workshop equipments is as shown in the table below:

Table 2-14. Content of the required workshop equipment

Required workshop equipment	
Maintenance tool set	
Tools for body works	
Tools for engine repairing	
Tools for suspension repairing	
Tools for oil changes	
Tools for equipment washing	
Tools for electric repairing	
Tools for brake repairing	
Tools for tires	

(2)-3-3. Spare parts

Type and quantity of the required spare parts are determined in consideration of existing repairing conditions, especially for the required regular checks, brakes, tires / wheels and suspension.

Table 2-15. Required Spare Parts

Regular check parts	Engine oil, fuel filter, air cleaner
For brake / hub	Brake shoe, lining, cylinder kit, and oil seal
For suspension	Suspension, shock absorber, wheel nut, and tie rod
For electrical	Lamp
Others	Body glass, power steering, differential, etc.

(2)-3-4. Equipment Specifications

Vehicle Body (Frame)	Ladder type	Bus vehicle body structures are roughly classified as ladder type, mono-cock type and skeleton type. In types other than ladder type, a part or almost all of the bus body is incorporated with vehicle body. The structure is complicated, and a special manufacturing method is applied (parts and welding) emphasizing thus a comfortable ride. Due to difficult maintenance in developing nations, a ladder type vehicle body (chassis) will be applied for easy body installation and excellent maintenance.
Engine Type	Diesel	As for bus engines, durability and reliability will be seriously emphasized. Normally the lifetime of a gasoline engine is 100,000 to 300,000 kms (100,000 kms when taking the replacement of important parts into account). Since buses are abused from frequent getting on and off of passengers, frequent starts and stops, and long-distance travel, generally speaking the lifespan of a bus should be 15 years. Therefore, the engine itself must be durable. Consequently, diesel engines that are designed to withstand high temperatures and pressure are best. Further, their maintenance is easy and they are advantageous from a safety point of view, due to its excellent fuel efficiency, low price (fuel cost) and high ignition point. Besides, since the specifications for displacement volume and other specifications, etc. are decided automatically based on gross vehicle weight, such details have been omitted.
	Supercharger (Turbo)	Vehicles that are operated in highlands such as Rwanda are installed with a supercharger in order to obtain a high output in which exhaust gases are reabsorbed to produce even higher output. Accordingly, superchargers will be installed (9,000 cc of displacement volume), or displacement volume will be increased by 20% more than those with a supercharger at this time. (Approximately 20% is considered the equivalent to an increase of 20% output from a supercharger.) With respect to medium-size buses, since engines without a supercharger will be able to cope sufficiently, and superchargers will not be installed to the majority of vehicles of the same class, superchargers will not be included in the specifications.
	Highland specifications	Since the equipment at this time will be utilized at 1,000 meters above sea level and on very hilly places, an air intake system able to cope with high altitude conditions will be applied for air cleaner efficiency and fuel pumps.
	Output	In relation to output, specifications recommended by the manufacturer will be applied to output compatibility for extremely hilly mountain roads based on gross vehicle weight.

2-21

Drive Train	Manual transmission	A drive train is a device that conveys the engine revolutions to the drive side and includes manual and automatic transmissions. Due to the poor environment such as bad roads and hilly surroundings, a manual transmission will be adopted for easy regulation of speed and driving, excellent servicing and lower cost.
Final Reduction Gear Device	Banjo type differential	Since this is a type generally used in large-sized vehicles, it is not necessary to list the specifications.
Steering	Power steering	As a driving device used in the severely rugged environment, such as long distances and poor roads, and for ease of operation for the driver (small power and large work volume), power steering will be adopted. Left hand drive will be applied in accordance with Rwandan traffic regulations.
Suspension	Leaf springs	Suspensions are roughly classified as leaf spring and air suspension types. Since the emphasis on air suspension is to provide a more comfortable ride by adjusting the vibration depending on the service capacity through compressed air, it has a complicated design and requires experience in maintenance. Therefore, a leaf spring type will be applied because of its simple structure, high reliability, easy maintenance and reasonable cost.
Other Chassis Specifications		In addition, with respect to the chassis, the overall length, height and width will be decided in accordance with Rwandan traffic regulations depending on service capacity.
Body	General	Bus bodies for ladder-type vehicles requested by the recipient country are not manufactured in Japan at the current time, and have not been observed in other advanced nations. As for similar African specifications, only approved local manufacturers of various installations are available in Southeast Asia and African nations. When taking the familiarity of the local utilization environment (Rwanda), affluent experience, and time efficiency into account, bus bodies will be procured (manufactured) in a neighboring country. With respect to specifications, in the similar manner as the above-mentioned chassis, the height inside the vehicle, seat position and lighting system will be decided in accordance with traffic regulations.
	Large buses	Overall chassis length is decided in accordance with service capacity (60-seat) and width of a driver's seat in principle. In the case of 60-seat use, the interval of each seat should be approximately 75 cm and 13 rows. In

		<p>addition, if the driver's seat is added, the overall length will be approximately 11 meters. In order to satisfy this body design, a frame of 10 meters, and a weight of approximately 6,000 kg are necessary. When adding the body weight (approximately 4,000 kg), the vehicle weight becomes approximately 10,000 kg. When adding approximately 4,500 kg for 60 seats (60 passengers x 75 kg) the total weight becomes 14,500 kg. In the specifications at this time, luggage to be brought is included, and durability is emphasized due to traveling on poor roads. Therefore, the overall vehicle weight will be around 16,000 kg as a standard. Furthermore, in the case of a 45-seat plus baggage room, similar specifications as above-mentioned will be applied, because the body conditions (weight and total length) are essentially the same.</p>
	Medium-size buses	<p>Based on the above-mentioned conditions, in the case of a 75 cm (seat interval) X 8 (row), the length will be 6 m. In addition to a driver's seat (1.5 m) the overall length will be 7.5 m. To satisfy this, a frame of approximately 7 m is necessary. Since its weight will be approximately 2,500 kg, when adding a body weight of 2,500 kg the vehicle weight will be approximately 5,000 kg. Accordingly, when adding the weight of max. 29 passengers (approx. 2,500 kg), the overall vehicle weight will be 7,500 kg. When adding luggage, etc., the overall vehicle weight is set to be approximately 8,000 kg. With respect to the basic utilization of vehicles, except for the wrecker and winch similar specifications of bus vehicles will be applied.</p>
Service Truck Body Structure, Operation Device	Wrecker, winch, 20 ton	<p>Although vehicle weight is 10 tons volume (when empty), the overall vehicle weight is designed to be 16 to 17 tons. If various conditions, such as luggage loading state and inclination (in a ditch) during a service overlap, volume becomes very limited creating a problem of durability and safety. Specifications for similar equipment have not yet been experienced. Accordingly, when deciding on the specifications for similar equipment, a margin should be taken into account.</p>
Tools	Mechanic tool set	<p>In the past equipment and materials procured were mainly allocated to Kigali Headquarters, and maintenance was also carried out in a concentrated manner. This time, equipment will be allocated to rural areas so that maintenance in local areas will play an important role. Consequently, maintenance content is expected to change substantially. Maintenance tool specifications (quantity) should therefore correspond with repair contents.</p>

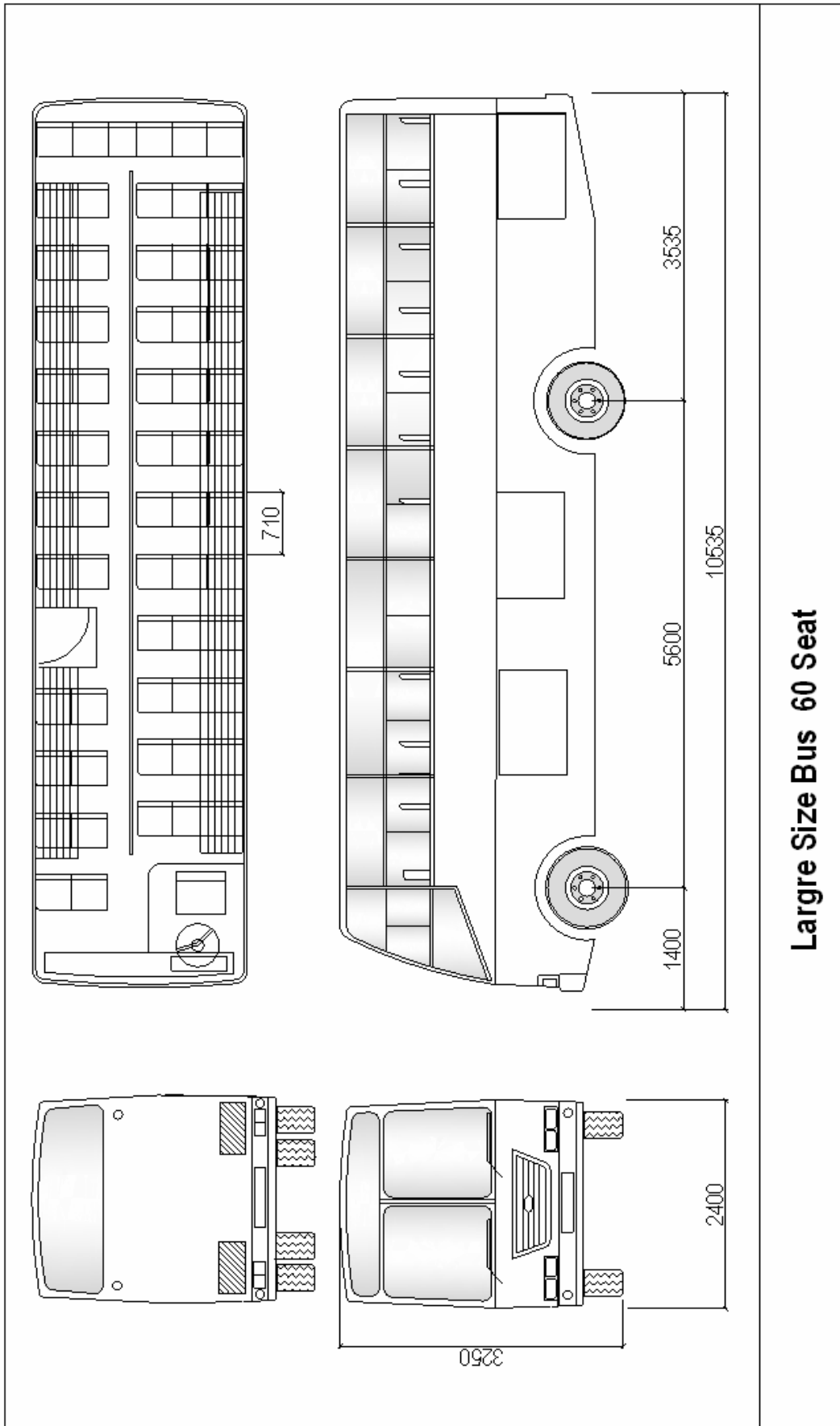
2-2-3. Basic Design Drawings

Basic Design Drawings for the Project are shown as follows:

Table 2-16. List of Basic Design Drawings

Drawing Number	Drawing Title	Remarks
Fig. 2-9	Large Bus General View (60-seat)	
Fig. 2-10	Large Bus General View (45-seat and Compartment Luggage Space)	
Fig. 2-11	Medium Bus General View	
Fig. 2-12	Service Truck General View	

Fig.2-9. Large Bus General View (60-seat)



Large Size Bus 60 Seat

Fig.2-10. Large Bus General View (45-seat and Compartment Luggage Space)

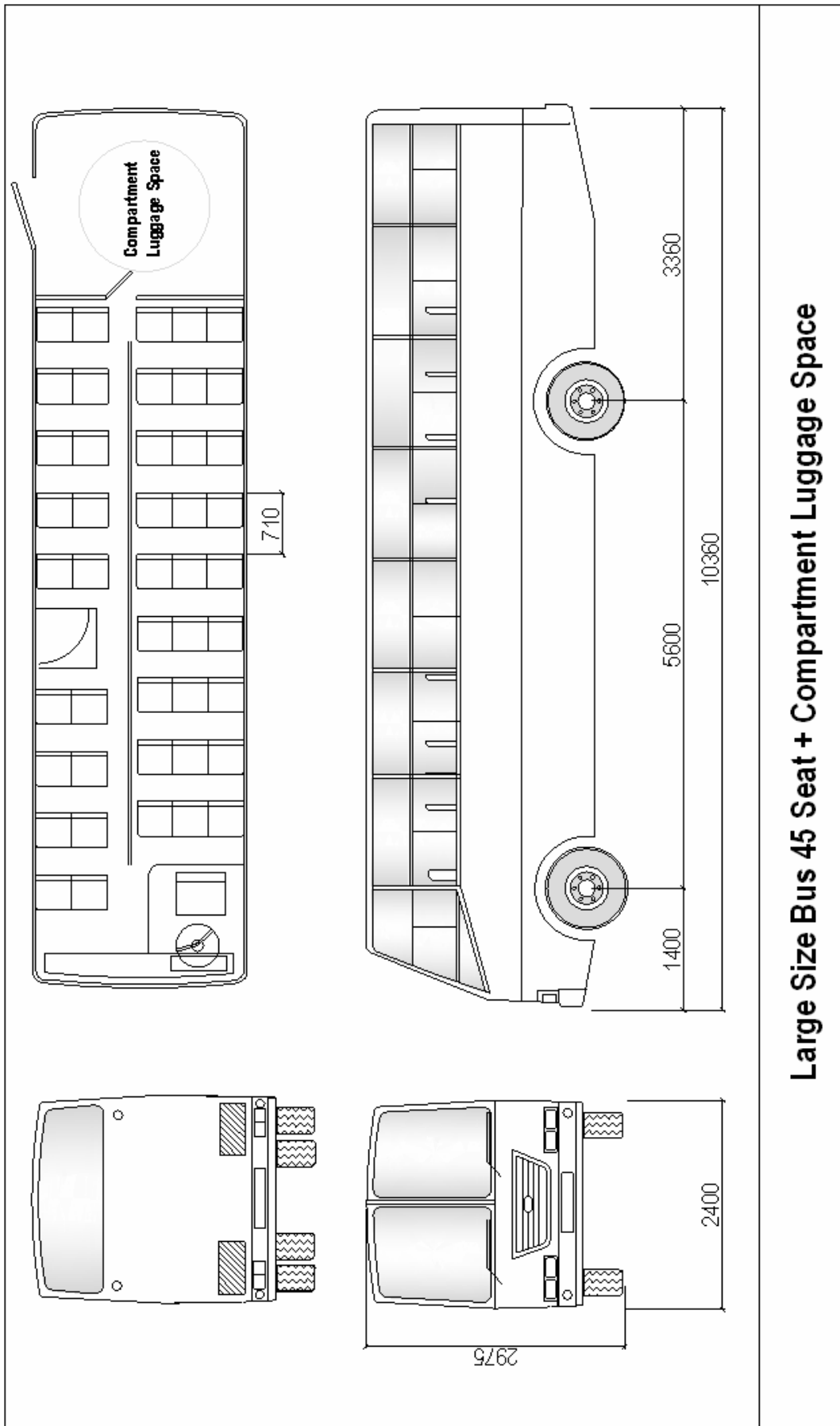
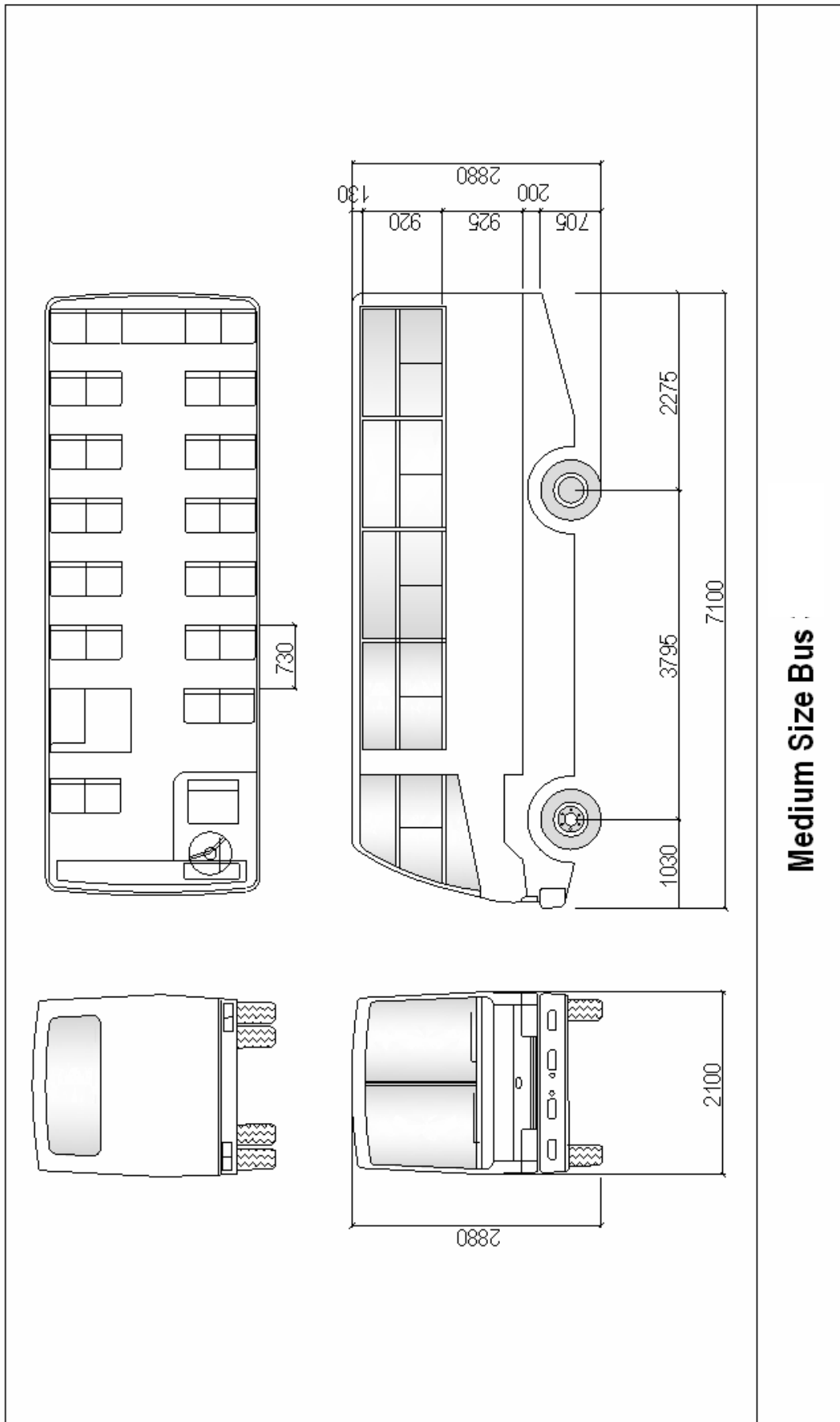
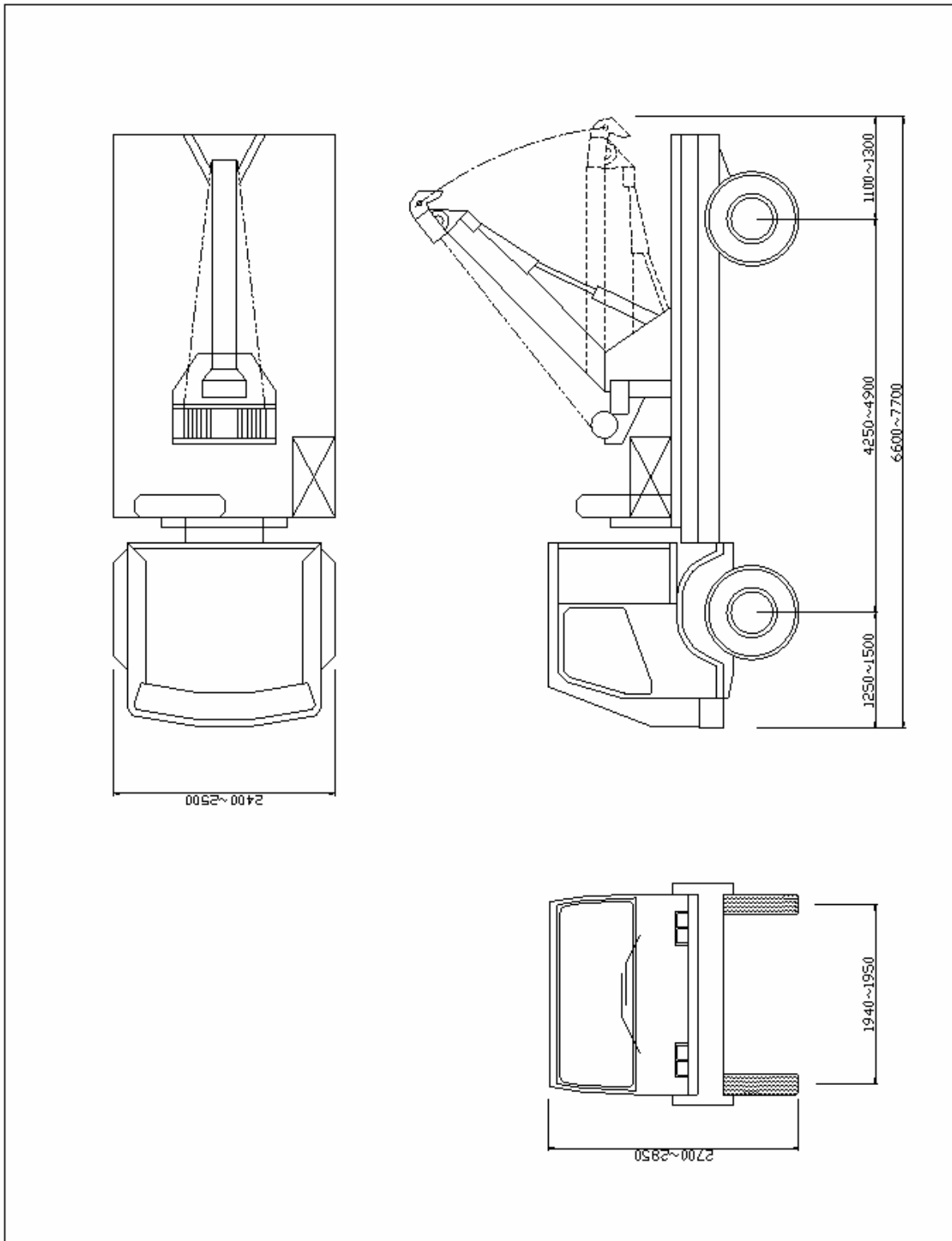


Fig.2-11. Medium Bus General View



Medium Size Bus

Fig.2-12. Service Truck General View



2-2-4. Implementation Plan

2-2-4-1. Procurement Policy

(1) Prerequisites for Procurement Implementation

The Project will be implemented in accordance with the framework of Japan's grant aid scheme. Therefore, the Project will be implemented upon the approval by the Government of Japan, and after the exchange of notes (E/N) between both governments.

(2) Project Implementation Mechanism in the Recipient Country

The competent agency of the Project on the Rwandan side will be the Ministry of Infrastructure and ONATRACOM will be the project implementation body and will be in charge of operation and maintenance of the Project. In order to smoothly carry out the Project, ONATRACOM will appoint a person responsible for the Project (project manager) who will work closely and hold discussions with the Japanese Consultant and equipment suppliers.

The appointed project manager must explain fully the components of the Project in relation to buses, service truck and maintenance tools to be procured to concerned parties in the Government of Rwanda, and obtain their cooperation for the smooth implementation of the Project.

2-2-4-2. Implementation Conditions

(1) Schedule Control

The Consultant will inspect both, the implementation schedule planned at the time of the contract, and the actual progress achieved every month. This way, equipment suppliers can strictly observe designated delivery dates prescribed in the corresponding contracts. If a delay in progress is forecasted, the Consultant shall provide with instructions in order to complete the work within the construction period stated in the contract, attract supplier's attention at the same time, and request specific countermeasures. The planned schedule and actual progress will be confirmed through the following:

- a) Confirmation of completed amount of equipment procured
- b) Confirmation of actually delivered equipment

(2) Safety Control

The Consultant will conduct safety control measures in order to prevent accidents involving concerned personnel, equipment suppliers, assistants and other third parties during travels and other transportation activities.

- a) Confirmation of transportation routes
- b) Preparation of safety control regulations and appointment of safety control manager

2-2-4-3. Scope of Work

The concept of undertakings shared by the Japanese and Rwandan sides is shown in Table 2-17. Accordingly, the Japanese side will procure the equipment of buses, service truck and maintenance tools.

Table 2-17. Country of Equipment Procurement

Equipment Name	Country of Procurement			Remarks
	Rwanda	Japan	Third Country	
Large Buses			O	Engine, chassis: Production in Japan Vehicle Body: Production in third country
Spare Parts for Large Buses		O	O	
Medium Buses			O	Engine, chassis: Production in Japan Vehicle Body: Production in third country
Spare Parts for Medium Buses		O	O	
Service Truck		O		
Spare Parts for Service Truck		O	O	
Workshop Equipments		O		

Since the Project will be divided into two phases, the equipment will be procured as follows:

Table 2-18. Components of Equipment Procurement Associated with Phasing

	Phase I	Phase II
Large Buses Engine, chassis (to be procured from Japan) Assembly and manufacturing of vehicle body (Neighboring countries)	42 units Buses to be allocated to Kigali Headquarters (heavy servicing), Butare, Kibungo and Gisenyi branch offices (moderate maintenance servicing)	28 units Buses to be allocated to Cyangugu, Kibuye, Byumba, Umutara, Gikongoro, Ruhengeri and Gitarama branch offices (light maintenance servicing)
Medium Buses Engine, chassis (to be procured from Japan) Assembly and manufacturing of vehicle body (Neighboring countries)	23 units	-
Service Truck (to be procured from Japan)	1 unit	-
Spare Parts (to be procured from Japan or third country)	Number of buses to be procured	Number of buses to be procured
Workshop Equipments (to be procured from Japan)	1 set	-

2-2-4-4. Implementation Plan

(1) Consultant

(1)-1. Detailed Design Scheme (Preparation of Detailed Design and Tender / Contract Documents, Tendering)

The duties of the Consultant pertaining to equipment procurement for the preparation of a detailed design and tender documents in order to assist with tendering activities are stated in the “Final Confirmation of the Components of the Plan,” “Review of Equipment Specifications, Etc.,” “Preparation of Tender and Contract Documents,” “Approval of Tender and Contract Documents” and the “Review of Estimation” from the recipient side. Subsequently, tendering, acceptance of application for tendering, examination of qualifications for tendering, distribution of tender documents, acceptance, and an analysis and evaluation of successful bidders are to be performed in order to make such successful agents act on behalf of the recipient country. Further, the Consultant will provide advice during contract negotiations between the Government of Rwanda and successful bidders, and assist in the conclusion of an equipment supply contract between both parties.

(1)-2. Procurement Supervision Scheme

After concluding a contract on equipment procurement, the Consultant will conduct an “inspection and approval of shop drawings of buses.” Then, the equipment manufacturing shall commence. Subsequently, “factory inspections,” “pre-shipment inspections,” “pre-shipping collation inspections,” and “acceptance and handing-over inspections” at the time of handing over the equipment at the sites shall be implemented. With respect to the large and medium-size buses whose vehicle bodies will be assembled in a neighboring country, “factory inspections” and “pre-overland transportation inspections” will be implemented at the assembly plant in the concerned country, while “acceptance and handing-over inspections” at the time of handing over equipment will be implemented in Rwanda.

(2) Equipment Supplier

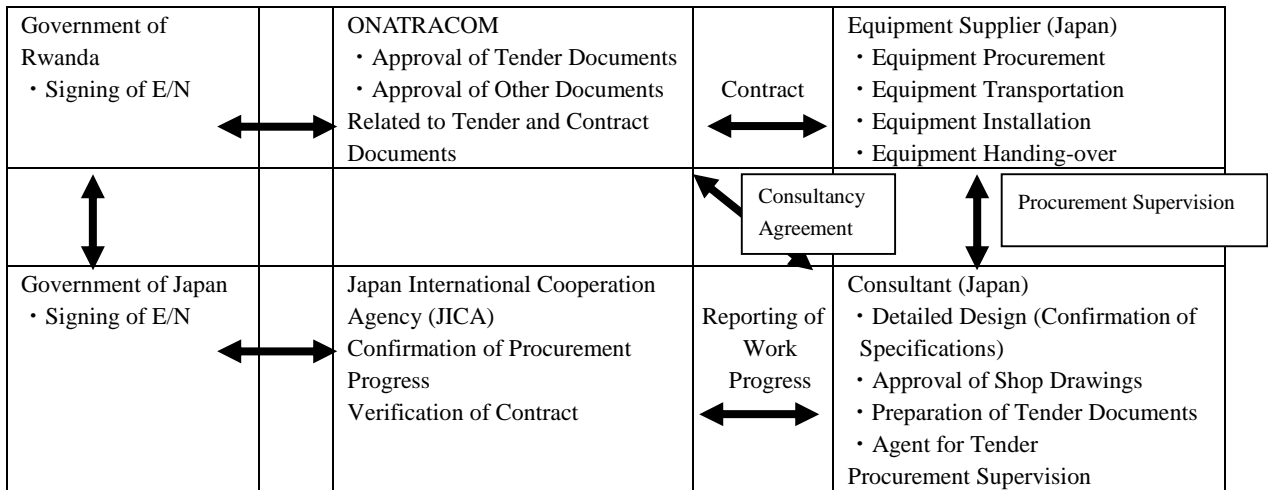
In accordance with the grant aid scheme of the Government of Japan, Japanese-national equipment suppliers selected by the Rwandan side will carry out equipment procurement under the Project. Sequentially after the completion of the Project, since equipment suppliers will be required to continuously supply spare parts and provide after service at the time when any trouble is detected, a contact system linking all concerned parties with ONATRACOM should be created, even after the handing over of equipment under the Project.

Installation work for workshop equipments and buses (such as pilot operation, guidance on initial operations and applications) will be implemented at the same time.

Installation work to be implemented by equipment suppliers and manufacturers is described as follows:

- a) Adjustment, pilot operation and guidance on initial operations of workshop equipments
- b) Guidance on initial operation by the bus manufacturer associated with bus equipment procurement
 - b)-1. Maintenance training:
 - Explanation of equipment to drivers, guidance on routine inspections and servicing duties
 - b)-2. Equipment function training:
 - Explanation of equipment to mechanics and on equipment functions and systems, training on equipment diagnosis methods
 - b)-3. Overhaul training:
 - Training for mechanics on removing, cleaning, inspecting and measuring, etc. engines

Fig.2-13. Procurement-Related Implementation Mechanism of Related Agencies



2-2-4-5. Quality Control

The Consultant manages supplier's procurement situation, that is to say, whether the equipments that was produced and delivered satisfies the quality and trading volume of the equipment as stated in the contract. When quality and volume of procurement equipment is not as specified in the contract, the Consultant shall request to correct the content of the equipment production to the supplier, and to change the production process. The inspection is done by the third party organization that the Consultant selects, before shipping the equipment.

Required items of quality control are shown as follows:

- (1) Check of the drawings for equipment production and specifications
- (2) Confirmation of origin country of engine and chassis
- (3) Confirmation of material proof of frame and plate material
- (4) Confirmation of painting specification and inspection record
- (5) Check of factory inspection attendance and inspection result
- (6) Packing, transportation and check of the temporary locale putting method
- (7) Attendance of trial run, adjustment of equipment, and check and inspection

2-2-4-6. Equipment Procurement Plan

Engines and chassis of buses procured through this Project are made in Japan in consideration of their easy maintenance and durability. Bus body production is done in neighboring countries (mainly Kenya), where repair and spare part procurement are easy, and reliability of their durability etc. is high, as for final product procurement (body production assembly).

The installation of a service truck has a purpose to deal with vehicle breakdown and accidents. Quality of their pulling facilities and secured durability are absolutely required.

Moreover, it is assumed that spare parts and workshop equipment is to be made in Japan, due to their suitability, quality and durability in relation to the Project requirements.

Number of required spare parts for buses is determined for 2 years, while for the service truck is determined for 3 years.

Because of their availability in Rwandan local markets, consumption items such as tires and batteries are not included in the Project.

2-2-4-7. Implementation Schedule

In accordance with the guidelines on Japan's grant ad scheme, the project implementation schedule is shown in Table 2-22.

Table 2-19. Project Implementation Schedule

Month	1	2	3	4	5	6	7	8	9	10	11	12
Detailed Design(Phase 1)	■	(Confirmation of Specifications)	(Preparation of Tender Documents)	(Approval of Tender Documents)	(Tendering & Approval)	(Tender Evaluation)						
									(Total 4.0 months)			
Detailed Design(Phase 2)	■	(Confirmation of Specifications)	(Preparation of Tender Documents)	(Approval of Tender Documents)	(Tendering & Approval)	(Tender Evaluation)						
									(Total 4.0 months)			
Equipment Procurement (Phase 1)	(Preparation of Shop Drawings & Acquisition of Approval)	(Manufacture)	(Transportation)	(Manufacture)	(Transportation)	(Confirmation, Handing-over)						
									(Total 8.0 months)			
Equipment Procurement (Phase 2)	(Preparation of Shop Drawings & Acquisition of Approval)	(Manufacture)	(Transportation)	(Manufacture)	(Transportation)	(Confirmation, Handing-over)						
									(Total 7.0 months)			

2-3 Obligations of Recipient Country

- (1) To bear commissions to a Japanese bank for banking services based on the Banking Arrangements (B/A).
- (2) To exempt Japanese nationals from customs duties, internal taxes and other fiscal levies, as well as to carry out procedures for customs clearance with respect to the bringing in of equipment and materials required for the Project.
- (3) To accord Japanese nationals involved in duties permission of entry and stay in Rwanda in accordance with verified contracts.
- (4) To secure personnel and budget necessary for operation and maintenance of equipment to be procured under the grand aid scheme.
- (5) Inspections prior to delivery: To appoint a responsible person on the Rwandan side who will witness inspections of equipment and materials at the time of delivery.
- (6) Dispose of remaining equipment: To dispose appropriately of existing vehicles scrapped until buses are procured under the Project.
- (7) Utilization of equipment procured: To use appropriately sets of equipment to be procured under the Project.
- (8) Leading in of electricity and water supply to each branch office: To secure electricity and water supply necessary for the effective maintenance of the Project.
- (9) Provision of counterparts: In order to carry out operation and maintenance of buses as scheduled after the implementation of the Project, select personnel who can cope with technical guidance on the cooperation implemented by the Government of Japan, and allow them to receive technical guidance.

2-4. Project Operations Plan

(1) Maintenance Scheme

In order to maintain appropriately the equipment to be procured under the Project, proper operations manuals should be prepared, and a maintenance system of preventive steps against accidents or breakdowns should be created.

After the implementation of the Project, technical guidance through cooperation for the improvement of equipment maintenance systems should be urgently adopted.

(2) Maintenance Competency

Maintenance personnel at ONATRACOM carry out routine disassembling and repair of engines, and disassembling, repair and assembling of most vehicles in order to ensure that maintenance skills are preserved. However, since buses to be procured will often be available at local branch offices, equipment layout and maintenance planning will change significantly. This is to be done in line with a major change in bus service planning. Therefore, overall control (operation,

maintenance and servicing control), together with a convenient maintenance system, should be appropriately carried out.

After implementation of the Project, technical guidance through cooperation should be provided so that the corresponding operation and maintenance plans can be implemented without delay.

2-5. Estimated Project Cost

2-5-1. Project Cost to be borne by Japan's Grant Aid

The total cost of the Project in terms of Japan's Grant Aid is estimated at JP 922 million yen. This integrates JP 627 million yen for Phase-I, and JP 295 million yen for Phase-II, as summarized in Table 2-23 and 2-24.

This cost estimate is provisional and would be further examined by the Government of Japan for the approval of the Grant.

Total Project Cost JP 922 million yen
Phase 1: JP 627 million yen
Phase 2: JP 295 million yen

Phase 1: 42 large buses, 23 medium buses, 1 service truck, 1 set of spare parts and 1 set of workshop equipments

Table 2-20. Project Cost in Phase 1

Item		Amount (Million Japanese Yen)	
Equipment	Large Buses: 42	418	607
	Medium-size Buses: 23	114	
	Service Truck	29	
	Workshop Equipment	46	
Detailed Design, Procurement Supervision and Technical Guidance		20	

Project Cost in Phase 1: JP 627 million yen

Phase 2: 28 large buses and 1 set of spare parts

Table 2-21. Project Cost in Phase 2

Item		Amount (Million Japanese Yen)	
Equipment	Large buses	279	279
	-		
	-		
	-		
Detailed Design, Procurement Supervision and Technical Guidance		23	

Project Cost in Phase 2: JP 295 million yen

(3) Considerations on Cost Estimate

- 1) Time of Estimate: February 2005
- 2) Exchange Rate: US\$ 1 =JP 107.03 yen
1 Kshs = JP 1.34 yen
1 FRW =JP 0.18 yen
- 3) Procurement Period: Approximately 12.0 months from the conclusion of the E/N in Phase 1
Approximately 11.0 months from the conclusion of the E/N in Phase 2
- 4) Other Project will be implemented in conformity with the Japan's Grant Aid Scheme.

2-5-2. Project Cost to be borne by the Rwandan Side

66.2 million FRW (US\$ 119,160 = approximately JP 12, 750,000 yen)

Project Cost to be borne by the Rwandan Side consists of: (1) Required cost for the implementation of the recruitment of staff (driver, conductor, mechanic and others), and (2) training cost for maintenance staff at each local branch and bus manufacturers in neighboring countries (such as Kenya) in order to improve their maintenance skills.

The above-mentioned cost is about 3% of ONATRACOM development budget. It is considered that ONATRACOM can assume such a cost.

Table 2-22. Expenses to be assumed by the Rwandan Side

(1) Required cost for the implementation of the recruitment of staff (driver, conductor, mechanic and others)	FRW 62 million US\$112,120 = (approximately JP 12 million yen)
(2) Training cost for maintenance staff at each local branch to receive overhaul training	FRW 4.2million US\$7,040 = approximately JP 750,000 yen)
	Total Cost: FRW 66.2 million (US\$ 119,160)

1 FRW = JP 0.18 yen

1 US\$ = JP 107.03 yen

2-5-3. Operation and Maintenance Cost

Future management at ONATRACOM is described in the following table. Accordingly, ONATRACOM business can be estimated as follows:

- 1) Assuming that the present fare system is continued, revenue from bus fares in 2007 is estimated to increase up to 173% of the year 2004 level, due to an increase in the annual number of passengers associated with the procurement of new buses, and the total revenue combining other income is forecasted to increase up to 170%.
- 2) On the other hand, the year 2007 expenditure for fuel, spare parts and tires, which is regarded to be as a major expenses, is estimated to increase up to 180% in comparison with the year 2004 level, due to an expansion in new routes and an increase in service frequency and service area, thus slightly exceeding the growth of revenue from fares. Furthermore, the annual expenditure in the year 2007, including an increase in staff and depreciation figures, is anticipated to increase up to 169% in comparison with the year 2004 level.
- 3) Accordingly, a business operation profit, and a sharp increase in the level of public transport services for rural areas without creating deficit is also anticipated.
- 4) ONATRACOM business after the year 2007 is expected to increase in proportion to the number of passengers, due to the settlement and increase in rural population, as well as the growth in passenger behavior and activity. On the other hand, expenditures at ONATRACOM are expected to move to the level scheduled, unless rapid inflation arises. Consequently, profit and gain is expected to continue on the plus side.
- 5) However, in order to convert the system through which the depreciation of vehicles and tools can be covered by revenue from bus fares, it is necessary to promote efforts in forward management, such as personnel reduction at the managerial level, labor efficiency and outsourcing.
- 6) The maintenance capability at workshops should be improved in order to secure continuous and regular operations of vehicles to be produced within the Project framework. Accordingly, Japan should dispatch experts and volunteers and provide technical aid through technical cooperation. Furthermore, it should also be possible to use effectively improved maintenance skills for the servicing of private-sector vehicles.

Chapter 3
PROJECT EVALUATION AND
RECOMMENDATIONS

Chapter 3. Project Evaluation and Recommendations

3-1. Project effects

Based on the Study, the effects of the Project are as follows:.

Table 3-1: Direct Effects

Current Situation and Difficulties	Project Countermeasures	Direct Effects / Improvement
Although ONATRACOM owns 69 large buses, only 60 of them are available for use. Of a total 86 service routes, 73 are actually in operation. Adequate public transportation services are thus not been provided to residents in rural areas.	By procuring 70 large buses and 23 medium buses, routes that were in service before the civil conflict may see their services resume.	The number of buses available for use will be increased from 60 to 153 units. The number of service routes will be increased from 53 to 162 routes, and the distance of service routes will be increased from 7,520 to 14,850 kms. Accordingly, the number of passengers will increase, and areas where it will be feasible to access bus services will be expanded.
In spite of the profit achieved since 2001, the cumulative deficit experienced until 2000 still remains.	By procuring 70 large buses and 23 medium buses, routes that were in service before the civil conflict may see their services resume.	Profits will increase due to the procurement of buses. Business management at ONATRACOM is to be improved.

Table 3-2: Indirect Effects

Expected Indirect Effects	Description
Revitalization of local and regional economies due to the improvement in public transportation capacity	Associated with an increase of service routes in rural areas, the flow of people (labor force) and materials (farm products, etc.) will improve, and the local and regional economies will be revitalized.
Improvement in BHN among local residents	By restoring the bus routes to the state prior to the civil conflict, accessibility to markets and public facilities, such as hospitals, clinics and schools will be improved. Improvement in BHN among local residents is thus expected.

Scale of Benefit

Area benefiting from the Project: All areas of Rwanda

Population benefiting from the Project: Approximately 8.1 million (Rwandan population)

3-2 Recommendations

The Rwandan side is expected to act in consideration of self-support and sustainability criteria in relation to this Project. Such are the basis of Japan's Grant Aid Policy. Matters required for implementation by the Rwandan counterpart are described below:

(1) Plan to Increase Staff and Securing of Necessary Budget

In order for the Project to display effects and to be sustainable, the most important tasks that the Rwandan side should take are to arrange necessary staff after the procurement of equipment and to verify a budget for maintenance.

Although large scale increments in new staff of same scale as existing staff is necessary in line with an increase in the number of buses under the Project, considering that the all departments of the Government of Rwanda has been implementing financial cutbacks, including the abolition of public vehicles for senior government officials or freezing of new staff recruiting, any request for an increase in staff should be made to the financial authorities after reducing to the appropriate number of staff required at the present time.

(2) Technical Guidance to ONATRACOM

In addition to the 60 buses currently in operation, 93 buses will be procured under the Project. Accordingly, an efficient service and management plan that does not place any relevant burden on vehicles and a maintenance scheme should be taken. In addition to a plan for increasing staff and securing the necessary budget, technical guidance is needed so that ONATRACOM may be able improve its vehicle maintenance skills and resources.

The contents of the technical guidance for ONATRACOM are described in Table 3-3.

ONATRACOM made a request pertaining to the dispatch of technical assistance experts. In relation with the preference of required experts, the first priority is workshop operational management, followed by service management. Although an expert in business management might be also needed, it appears that local human resources can work as a substitute.

Table 3-3: Technical Guidance for ONATRACOM

	At Implementation of Grant Aid (Guidance on Services)	Technical Assistance			
	Supplier / Manufacturer	Expert in Workshop Operational Management (First Priority of Rwandan Side)	Expert Dispatch Expert in Bus Service and Operation Planning (Second Priority of Rwandan Side)	Expert in Business Management (Third Priority of Rwandan Side)	Technical Guidance by JOCV (Guidance on Vehicle Maintenance)
Scheme	Implementation of Grant Aid (Guidance on Services, etc.)	Long-Term Expert Dispatch	Short-Term Expert Dispatch	Dispatch of Short-Term Experts or dispatch of Experts from the Private Sector on Rwandan Side	JOCV Dispatch
Dispatching Period	At the time of delivering equipment	(a) Before procurement: One month To grasp on-site conditions and formulate operation contents (b) After procurement: Long-term dispatch (About 2 years) Guidance on workshop operational management (Objectives: (1) Not only Kigali Head Office but also local branch offices likely to improve their workshop management; and (2) Implementation of continuous and efficient bus services with buses to be newly procured, together with the currently available ones. Long-term experts should be dispatched for continuous implementation of technical guidance instead of single-action guidance.)	(a) Before procurement: One month To grasp on-site conditions and formulate operation contents (b) After procurement: Annually 2 months during 2 years. Guidance on service and operation planning at the time of Phase 1 procurement, 4 months after the procurement, at the time of Phase 2 procurement, 4 months after the procurement (Objectives: (1) To confirm the accomplishment of project goals; and (2) to provide guidance at the time of procurement and each time after procurement.)		Dispatch in preparation for the procurement time (approximately 2 years)
Duty Place		Kigali Head Office and local branch offices of ONATRACOM	Kigali Head Office of ONATRACOM	Kigali Head Office of ONATRACOM	Kigali Head Office of ONATRACOM
Technical Guidance Contents	Installation work for maintenance equipment and guidance on operations <ul style="list-style-type: none"> Explanation on equipment to drivers, guidance on routine checkups and maintenance Explanation on equipment, functions and systems to mechanics, training on a diagnosis method of equipment, training for simulation by using diagnosis tools 	<ul style="list-style-type: none"> Guidance on equipment control Technical guidance on measurement and adjustment, etc. Preparation of long-term plan related to the left-mentioned training and establishment of maintenance Guidance on preparation of maintenance records and maintenance management ledgers and its operation 	<ul style="list-style-type: none"> Service routes planning Preparation of bus service ledgers Service routes map preparation Planning for appropriate allocation of buses at service routes Appropriate personnel arrangement (drivers and conductors) Database preparation (number of passengers, frequency of 	<ul style="list-style-type: none"> Management analysis and plan preparation Appropriate budgetary steps Job guidance for each department staff and job descriptions clarification Establishment of a charge collection, fuel and equipment inventory control systems Clarification of responsibilities for breakdown of bus equipment or accidents Formulation of measures for 	<ul style="list-style-type: none"> Improvement in skills on mechanics Periodical technical guidance at Kigali Head Office and local branch offices Guidance on preparation and control equipment ledgers and records Guidance on spare parts control and ordering

	<ul style="list-style-type: none"> • Training on engine overhauling, cleaning, inspection, measurement and assembling (overhauling training) training on how to use workshop manuals and tools 	<ul style="list-style-type: none"> • Appropriate arrangement of staff associated with an increase in the number of buses and technical guidance • Preparation of maintenance schedule for service buses at local branch offices • Budgetary steps for appropriate maintenance • Equipment scrapping plan and procedures for disposal • Guidance on skills for preparation of equipment maintenance and control database (at Head Office) • Guidance on skills for spare parts control (shipment and ordering, control of management records and ledgers) • Workshop management at Kigali Head Office and local branch offices • Bus maintenance plan based on an appropriate vehicle allocation plan at service routes • Guidance on spare parts control and ordering 	<p>service, traveling distance and fuel consumption</p> <ul style="list-style-type: none"> • Appropriate budgetary steps • Job guidance for staff in each department • Improvements in bus stops and bus terminals • Charge collection system establishment • Service management at Kigali Head Office and local branch offices • Guidance on safe driving 	<p>cost reduction</p>	
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APPENDICES

- 1. Member List of the Study Team*
- 2. Study Schedule*
- 3. List of Parties Concerned in the Recipient Country*
- 4. Minutes of Discussions*

1. Member List of the Study Team

Appendices-1 Member List of the Study Team

1-1 Field Survey (from February 9 to March 3,2005)

Name	Job Title	Occupation
Mr. Yoshinari OSHIMA	Leader	Deputy Director General, Grant Aid Management Department, JICA
Mr. Kotaro NISHIGATA	Project Coordinator	Traffic Infrastructure Team, Project Management Group II, Grant Aid Management Department, JICA
Mr. Hiroaki TAKAHASHI	Chief Consultant / Public Transport Planner	Japan Engineering Consultants Co., Ltd.
Mr. Masanori TAKEISHI	Vehicle Engineer	Japan Engineering Consultants Co., Ltd.
Mr. Hisashi MUTO	Equipment Engineer/ Procurement Planner / Cost Estimator	Japan Engineering Consultants Co., Ltd.
Mr. Eric NKUBITO	Interpreter for Consultant members	Japan Engineering Consultants Co., Ltd.
Mr. Toshiyuki MORITA	Interpreter for JICA members	Japan International Cooperation Center

1-2 Explanation on Draft Report (from June 3 to June 12,2005)

Name	Job Title	Occupation
Mr. Yuki ARATSU	Leader	Team Director, Transportation and Electric Power Team, Project Management Group I, Grant Aid Management Department, JICA
Mr. Hiroaki TAKAHASHI	Chief Consultant / Public Transport Planner	Japan Engineering Consultants Co., Ltd.
Mr. Hisashi MUTO	Equipment Engineer/ Procurement Planner / Cost Estimator	Japan Engineering Consultants Co., Ltd.
Mr. Eric NKUBITO	Interpreter for Consultant members	Japan Engineering Consultants Co., Ltd.

2. Study Schedule

Appendices-2 Study Schedule

2-1 Field Survey (from February 9 to March 3,2005)

The Basic Design Study Schedule on the Project for Rehabilitation of the Public Transport

Date	JICA		Consultants				JICA Member	
	Leader	Project Coordinator	Chief Consultant / Public Transport Planner	Vehicle Engineer	Equipment Engineer / Procurement Planner / Cost	Interpreter	Interpreter	
	① Mr. Y. Oshima	② Mr. K. Nishigata	③ Mr. H. Takahashi	④ Mr. M. Takeishi	⑤ Mr. H. Muto	Mr. E. Nkubito	⑥ Mr. T. Morita	
1	6-Feb	Sun	HND1925-(JL1317)-2040KIX2320-(JL5099)-				/	/
2	7-Feb	Mon	0515DXB0810-(EK723)-1210NBO					
3	8-Feb	Tue	Courtesy Call on EOJ, JICA Kenya office					
4	9-Feb	Wed	Acquisition of Rwanda VISA					
5	10-Feb	Thu	NBO1330-(KQ474)-1530KGL					
6	11-Feb	Fri	Courtesy Call on MOI, ONATRACOM, MOF, MOFA and WB (Explanation of I/R, Hand out of Questionnaire to MOI /					
7	12-Feb	Sat	Site Survey in Kigali City					
8	13-Feb	Sun	Site Survey in Kigali City					
9	14-Feb	Mon	Team Meeting					
10	15-Feb	Tue	NRT(12:00)--LHR(15:40)/JL411 LHR(20:30)--/BA089 --NBP(08:15)/BA089	Site Survey in Province Area of Rwanda	HND1925-2040KIX2320- 0515DXB0810-1210NBO	Site Survey	NRT(12:00)-- LHR(15:40)/JL411 LHR(20:30)--/BA089 --NBP(08:15)/BA089	
11	16-Feb	Wed	Meeting at JICA Kenya Office Courtesy Call on EOJ	Site Survey in Province Area of Rwanda	Meeting at JICA Office Courtesy Call on EOJ	Site Survey	Meeting at JICA Office Courtesy Call on EOJ	
12	17-Feb	Thu	Acquisition of Rwanda VISA NBO(17:00)--KGL(17:20)/KQ1108	Site Survey (Aid Trend Study of Other Donors)	Acquisition of Rwanda VISA NBO(17:00)-- KGL(17:20)/KQ1108	Site Survey	NBO(17:00)-- KGL(17:20)/KQ1108	
13	18-Feb	Fri	Courtesy Call on MOI, MOF, MOFA and ONATRACOM Discussion with ONATRACOM					
14	19-Feb	Sat	Site Survey in Province Area of Rwanda					
15	20-Feb	Sun	Site Survey in Province Area of Rwanda					
16	21-Feb	Mon	AM: Discussion with ONATRACOM PM: Courtesy call on other donors (WB and more if there is any)	Site Survey on Equipment	Site Survey on Equipment	AM: Discussion with ONATRACOM PM: Courtesy call on other donors (WB)		
17	22-Feb	Tue	Discussion on M/D with MOI / ONATRACOM	Site Survey	Site Survey	Discussion on M/D with MOI / ONATRACOM		
18	23-Feb	Wed	Signing of M/D	Site Survey	Site Survey	Signing of M/D		
19	24-Feb	Thu	KGL(10:05)--NBO(12:25)/KQ474 Report to EOJ and JICA Kenya Office	Site Survey	Site Survey	Site Survey	KGL(10:05)-- NBO(12:25)/KQ474 Report to EOJ /JICA	
20	25-Feb	Fri	NBO(09:50)--LHR(16:20)/BA088 LHR(19:00)--/JL402 --NRT(15:50)/JL402	Site Survey	Site Survey	Site Survey	NBO(09:50)-- LHR(16:20)/BA088 LHR(19:00)--/JL402 --NRT(15:50)/JL402	
21	26-Feb	Sat		Site Survey	Site Survey	Site Survey	--NRT(15:50)/JL402	
22	27-Feb	Sun		KGL1350-(KQ477)-1610NBO				/
23	28-Feb	Mon		Report to EOJ and JICA Kenya Office, Site Survey for Clearance Procedure				
24	1-Mar	Tue		Site Survey in Nairobi	Site Survey in Nairobi			
25	2-Mar	Wed		Site Survey in Nairobi	0015DXB0235-1625KIX-HND			
26	3-Mar	Thu		NBO1820-				
				0015DXB0235-1625KIX-HND				

Legend: NRT / Narita, LHR / London Heathrow, NBO / Nairobi, KGL / Kigali, DXB / Dubai, KIX / Kansai Int'l, HND / Haneda

Legend: MOI / Ministry of Infrastructure, MOF / Ministry of Finance(CEPEX), MOFA / Ministry of Foreign Affairs, WB / World Bank, EOJ / Embassy of Japan, M/D / Minute of Discussion,

2-2 Explanation on Draft Report (from June 3 to June 12,2005)

Date			JICA	Chief Consultant/Public Transport Planner	Equipment Engineer/Procurement Planner/Cost	Stay
1	3-June	Fri	Kansai			In Air
2	4-June	Sat	Dubai Nairobi			Nairobi
3	5-June	Sun	Nairobi Kigali			Kigali
4	6-June	Mon	Explanation and Discussion on Draft Report, Courtesy call to Secretary General of Ministry of Infrastructure			Kigali
5	7-June	Tue	Courtesy call to Minister of Ministry of Infrastructure、 Explanation and Discussion on Draft Report			Kigali
6	8-June	Wed	Discussion for M/D, Explanation of M/D to Secretary General of Ministry of Infrastructure			Kigali
7	9-June	Thu	Signing of M/D			Kigali
8	10-June	Fri	Kigali Nairobi、 Report to JICA office and Embassy of Japan in Kenya			Nairobi
9	11-June	Sat	Nairobi Dubai			In Air
10	12-June	Sun	Dubai Kansai			Tokyo

3. List of Parties Concerned in the Recipient Country

Appendices-3 List of Parties Concerned in the Recipient Country

3-1 Field Survey (from February 9 to March 3,2005)

3.1.1 Government of Rwanda

(1) Ministry of Infrastructure

Minister Eng. BIZIMANA Evariste

Director of Transport Department Mr. MUNYARUYENZI Philippe

(2) ONATRACOM

Managing Director Mr. VINCENT GATWABUYEGE

Board Member(Chief) Mr. KARARA Elam (Prime Ministers Office)

Board Member Mr. Alexis DUKUNDANE (Ministry of Local Government, Community
Development and Social Affairs)

Board Member Mr. L. Kanamugire Rwaka (Rwanda Motor S.A.)

Work Shop Manager Mr. Damien NTAHORUGIYE

(3) Ministry of Finance and Economic Planning

Secretary General Mr. Claver GATETE

Director of CEPEX Mr. Jean Jacques NYIRUBUTAMA

(4) Ministry of Foreign Affairs

Secretary General Mr. Mukama B. Augustin

3.1.2 National Organization

(1) World Bank

PIGU Project coordinator Mr. Emmanuel NYIRINKWAYA

3.1.3 Private Bus Operator

(1) ATRACO: Mr. NSABIMANA Sylvain

(2) Volcano: Mr. Nizeyimana Olivier

(3) Virunga: Mr. Rutajorwa Joseph

(4) T2000: Mr. Paul Rutabuzwa

(5) Stella: Ms. Uwera Alice

(6) Ómega: Mr. Jyusamimana Joseph

3.1.4 Government of Japan

(1) Embassy of Japan in Kenya

First Secretary Mr. Masanori Yuzawa

(2) JICA Kenya Office

Resident Representative Mr. Yoshiaki Kano

Deputy Resident Representative Mr. Jiro Inamura

Assistant Resident Representative Mr. Masaru Ishizuka

(3) Ministry of Foreign Affairs and Cooperation

ODA Adviser Mr. Masayoshi Ono

3-2 Explanation on Draft Report (from June 3 to June 12,2005)

3.2.1 Government of Rwanda

(1) Ministry of Infrastructure

Minister Eng. BIZIMANA Evariste

Secretary General Mr. Emmanuel NSANZUMUGANWA

(2) ONATRACOM

Managing Director Mr. Esdras Nkundumukiza

Board Member(Chief) Mr. KARARA Elam (Prime Ministers Office)

Former Managing Director Mr. VINCENT GATWABUYEGE

3.2.2 Government of Japan

(1) Embassy of Japan in Kenya

Second Secretary Mr. Tomoyuki Yamamoto

(2) JICA Kenya Office

Resident Representative Mr. Yoshiaki Kano

Assistant Resident Representative Mr. Tomomi Kanenawa

Project Formulation Adviser Ms. Naoko Imoto

(3) Ministry of Foreign Affairs and Cooperation

ODA Adviser Mr. Masayoshi Ono

4. Minutes of Discussions

Appendix 4 Minutes of Discussions

4-1 M/D on Feb.26, 2005

MINUTES OF DISCUSSIONS
ON THE BASIC DESIGN STUDY
ON THE PROJECT FOR REHABILITATION OF THE PUBLIC TRANSPORT
IN THE REPUBLIC OF RWANDA

Based on the results of the Preparatory Study, the Government of Japan decided to conduct a Basic Design Study on the Project for Rehabilitation of the Public Transport (hereinafter referred to as "the Project") and entrusted the study to the Japan International Cooperation Agency (hereinafter referred to as "JICA").

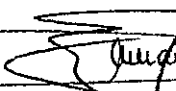
JICA sent to the Republic of Rwanda (hereinafter referred to as "Rwanda") the Basic Design Study Team (hereinafter referred to as "the Team"), which is headed by Yoshinari Oshima, Deputy Director General, Grant Aid Management Department, JICA, and is scheduled to stay in the country from February 9 to February 26, 2005.


The Team held discussions with the officials concerned of the Government of Rwanda and conducted a field survey at the study area.

In the course of discussions and field survey, both parties confirmed the main items described on the attached sheets. The Team will proceed to further works and prepare the Basic Design Study Report.

Kigali, February 23, 2005


Yoshinari Oshima
Leader
Basic Design Study Team
Japan International Cooperation Agency


Emmanuel Bizimana
Secretary General
Ministry of Infrastructure
Republic of Rwanda


Vincent Gatwabuyege
Managing Director
Office National des Transports en Commun
(ONATRACOM)
Republic of Rwanda



ATTACHMENT

1.Objective of the Project

The objective of the Project is to improve public transportation system in Rwanda through procurement of buses (in order to stimulate rural development).

2.Project sites

The sites of the Project are as follow;

Head Office : Kigali

Branch Office : Butare, Gikongoro, Cyangugu, Kibuye, Gisenyi, Ruhengeri, Byumba,
Umutara, Kibungo, Gitarama (it is going to be newly opened)

The location of the sites is as shown in Annex-1.

3.Responsible and Implementing Organization

3-1.The Responsible Organization is the Ministry of Infrastructure.

3-2.The Implementing Organization is ONATRACOM.

3-3.The organization charts of Ministry of Infrastructure and ONATRACOM are as shown in Annex-2.

4.Items requested by the Government of Rwanda

After discussions with the Team, the following items were finally requested by Rwandan side. JICA will assess the appropriateness of the request and will recommend to the Government of Japan for approval.

1)70 large buses (60 seats and 45 seats with compartment luggage)

2)10 medium buses with 25 seats

3)1 service truck

4)Spare Parts for procured buses and service truck

5)Workshop Equipment

Additional request at the Preliminary Study

6)13 medium buses with 25 seats

Lists of main spare parts and workshop equipment are as shown in Annex-3. These lists will be reviewed in the Basic Design Study and report in the draft final report.

5.Japan's Grant Aid Scheme

Rwandan side understands the Japan's Grant Aid Scheme and the necessary measures to be taken by the Government of Rwanda as explained by the Team and described in Annex-4 and 5.

6.Schedule of the Study

6-1. The consultants will proceed to further studies in Rwanda until February 26, 2005.



6-2. JICA will prepare the draft report in English and dispatch a mission in order to explain its contents in May, 2005.

6-3. In case that the contents of the report is accepted in principle by the Government of Rwanda, JICA will complete the final report in English and send it to the Government of Rwanda by the end of July,2005.

7. Other relevant issues

7-1. Rwandan side requested technical cooperation in the following fields to operate procured buses properly and efficiently, and understood that the official request shall be submitted to the Government of Japan through Ministry of Foreign Affairs & Cooperation of Rwanda.

- 1) Transport Network Planning
- 2) Enhancement of Capacity of Workshop Mechanics
- 3) Management of Workshop Operations

The Team explained that certain components of above subjects might be included in consultant services as one of the components of the Grant Aid.

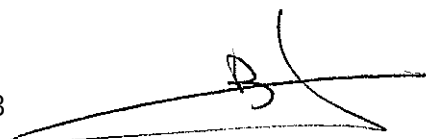
7-2. Rwandan side emphasized the necessity of procurement of 93 buses. The Team replied that the request raised by Rwandan side would be conveyed to the Government of Japan, but on the other hand, the necessity and justification of procurement of 93 buses should be examined carefully in the Basic Design Study. The Team also pointed out that, in order to implement the Project effectively and properly, the institutional capacity of the implementing organization in Rwanda, such as proper operation/ maintenance system, necessary financial arrangement including assignment of human resources, must be important.

7-3. Rwandan side also requested that the procurement period of 93 buses be shorten as much as possible. The Team explained the outline of implementation schedule using the flow chart of Japan's Grant Aid Procedure as per attached in the Inception Report. The Team also explained that above mentioned procedure is divided in 4 different stages in which indispensable procedures are described. In addition to those official procedures which have to be followed by both Governments, on the other hand, technical specifications should be required for procurement of buses. Technical specifications for buses should be made taking into consideration of the roads, operation and loading conditions. Buses may be manufactured according to the technical specifications mentioned above by special order. It is not possible for us to procure these buses on the market. Therefore, certain period must be necessary to manufacture the buses.

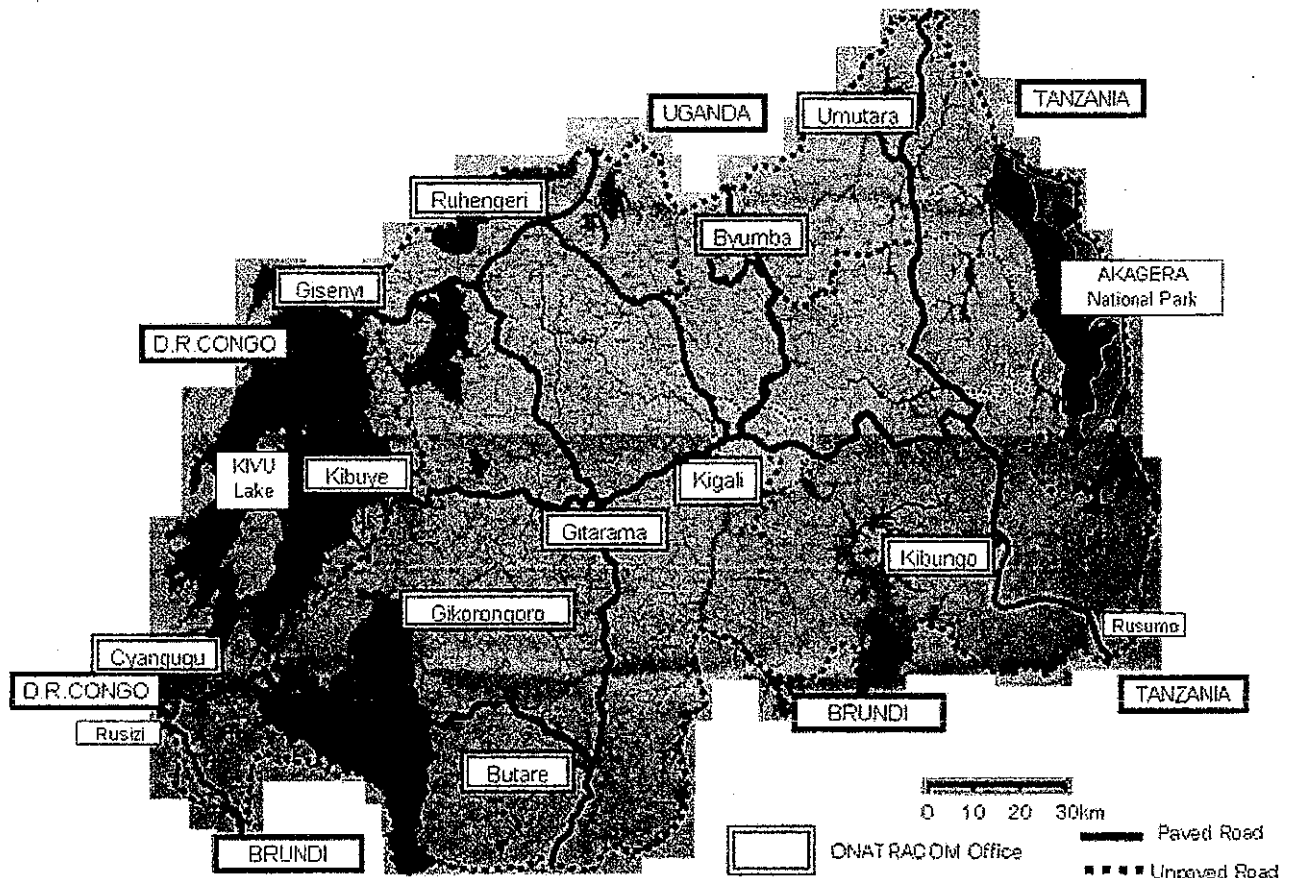
7-4. Both sides confirmed that the Government of Rwanda has no plan of privatization of ONATRACOM.



AP-8



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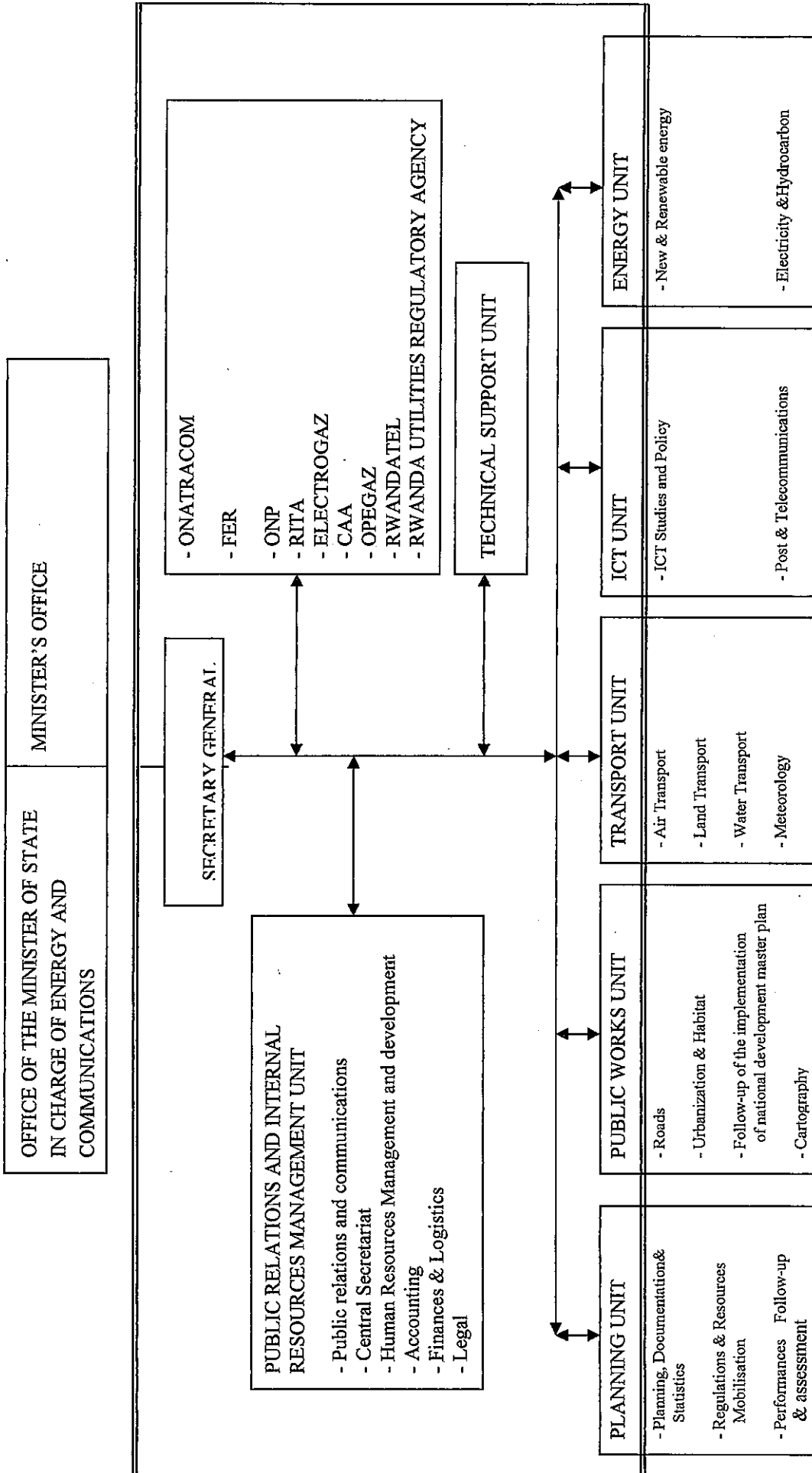


LOCATION MAP

AP-9

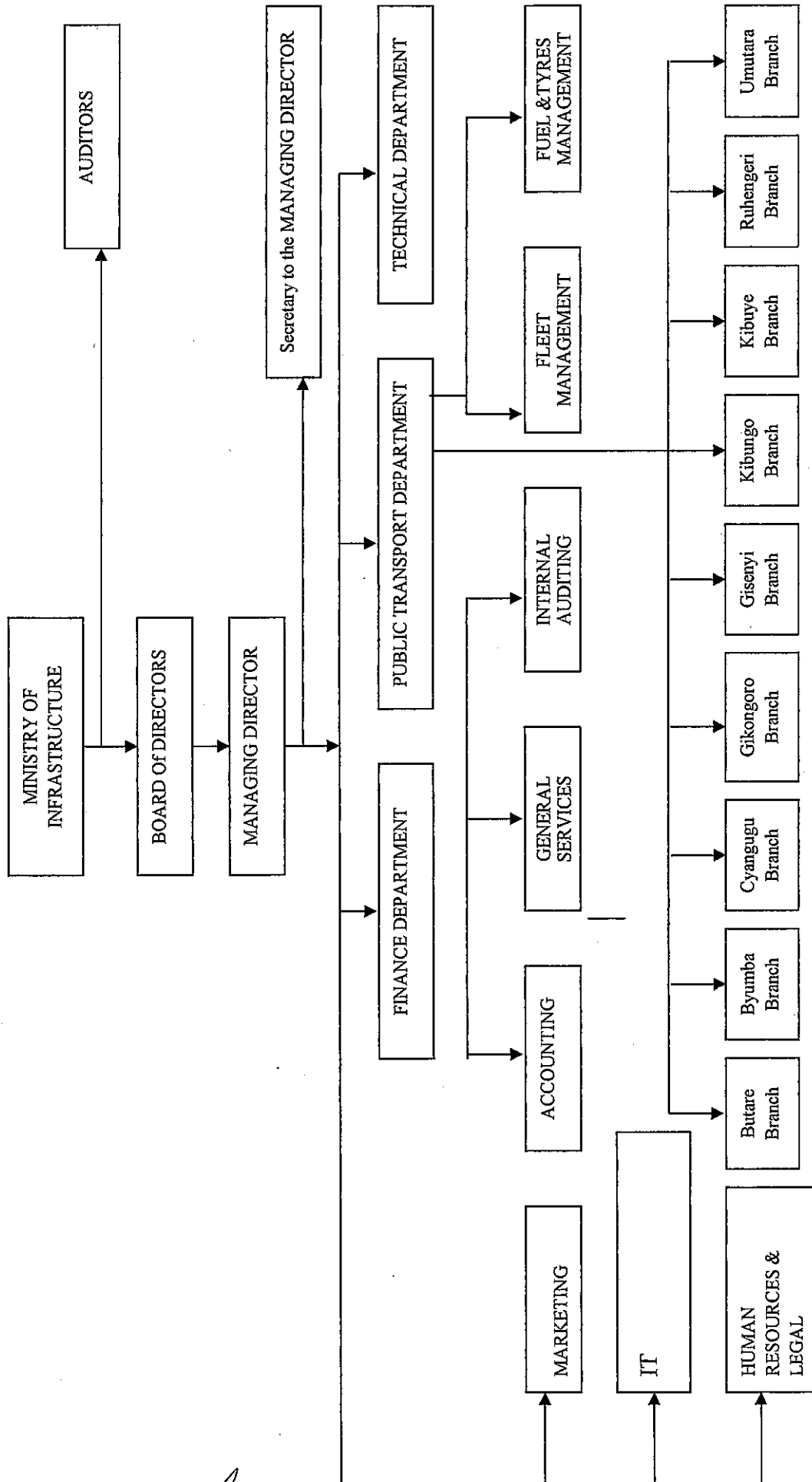
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Organizational Chart of Ministry of Infrastructure



Car

Organizational Chart of ONATRACOM



Work shop tool requirement

General information

Electrical standard
AC220V, 50Hz




AP-12

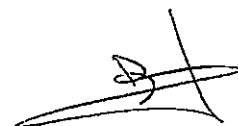


No.	DESCRIPTION	Q'ty	SPECIFICATION
1	Adjustable wrench	10	Approx. Max. opening 34mm.x300mm long
		10	Approx. Max. opening 44mm.x380mm long
		10	Approx. Max. opening 54mm.x450mm long
2	Adjustable pipe wrench	5	Approx. opening 40mm.x300mm long
		5	Approx. opening 65mm.x450mm long
		5	Approx. opening 80mm.x600mm long
3	Adjustable reamer	2	Adjustable range 9.5-10.25,
		2	Adjustable range 13.5-16,
4	Air blow gun	10	Popular type, approx. overall length 170mm
5	Air compressor	5	Motor 200V, approx. 7kW, 3-ph, 3-cylinder, approx. 200lt air tank cap. approx. working pressure 1.14-1.5MPa, Air out let 1/4x1, 1/3x1 inc.
6	Air compressor oil	2	MC type, 20lt cap.
7	Air Chuck	12	For passenger car, Truck Special long type
8	Air Chuck Gauge	12	for Passenger, Truck 0.05-1.08MPa Capacity Apporox. 800mm length with hose
9	Air hydraulic garage juck	1	• Cap. 5ton Saddle Height apporox. 150-550mm(Min.-Max) approx. Lift 400mm, Operating air pressure approx. 0.6-1.4MPa Required compressor approx. 2.2kW
		3	• Cap. 10ton Saddle Height apporox. 160-550mm(Min.-Max) approx. Lift 400mm, Operating air pressure approx. 0.6-1.4MPa Required compressor approx. 3.5kW
10	Air impact wrench	2	• Capacity 42mm(bolt dia.) Revolution(No-Load) approx. 3000rpm Air consumption 1.0m ³ /min with 38, 41mm accessary socket
		2	• Capacity 16mm(bolt dia.) Revolution(No-Load) approx. 6000rpm Air consumption 0.4m ³ /min with 19, 21, 23mm accessary socket
11	Air rivetter	2	Air pres. Approx. 0.54-0.58MPa, required rivet dia. ϕ 2.4 ϕ 3.2 ϕ 4.0 ϕ 4.8
12	Air rotary cutter	2	Approx. revolution(non-road) 13000rpm, air pressure 0.58MPa
13	Air Hose	3	Urethan Hose 8.5(Dia.mm)x100(Leng.m), Air pressure 1.4MPa
		6	Rubber Hose 12(Dia.mm)x10(Leng.m)
14	Air Hose band	10	8-12mm dia
		10	10-15mm dia
		10	16-22mm dia
		10	22-30mm dia
		10	35-50mm dia
		10	40-55mm dia
15	Air hose joint	20	Hose joint PS1/4
		20	Hose joint intermediate PS1/4
16	Air valve lapper	1	air pressure approx. 0.5MPa or more

No.	DESCRIPTION	Q'ty	SPECIFICATION
17	Automatic mig-mag welder	1	Rated current approx. 135A, Primary Input 1ph, 4kW, current range 20-135A
18	Anchor pin puller	2	Contents Main units, Hammer, Adapter, Tap
19	Arc welder	4	Power source pre.Input 24kVA, rated current 300A with accessory kit incl. safety holder, Earth clip, hammer, helmet etc.
20	Battery charger	1	AC Input 1-ph.,50/60Hz, 410VA, AC Output 6-12V.20A, 18-24V.10A
21	Battery quick charger	1	Application 12V/10AH-24V/200AH, AC Input AC200-220V Dc output 12-24V, max.100A, rate 80A
22	Battery tester	2	Applicable battery 6-12V, 6-12AH
23	Battery starter	1	Valed size approx. 485x550mm(LxW)
24	Battery-syringe	3	Approx. Length 250mm
25	Battery filler	1	Cap.4lt
26	Battery hydrometer set	1	Content with hydrometer, thermometer, sylinge
27	Ball peen hammer	3	Approx.900g weight, overall length 400mm
28	Bearing puller	2	Bealing inner dia. 10,12,15,17,20,25,30,35φ
29	Bearing grease packer	1	for bearing grease filling, Output pres. Approx.22MPa, volume 350g/min,with attachment kit Gun, H.P.Hose, Nozzle
30	Blind bearing puller	1	Cap. Approx.10-32φ
31	Brake cylinder hone set	1	for large truck contents 35-41,41-51,51-61φ Grit#240
32	Brake booster tester	1	approx. Vac.75cm/Hg, Pressure gauge 19.6,9.8,0.98MPa
33	Brake spring plier	1 2	Overall length approx.500mm Overall length approx.700mm
34	Brake lining rivetter kit	1	Contents Air hammer, Knockout punch, rivetter punch φ6,φ7 etc.
35	Brake drum gauge	1	Range 150-430mm, dial gauge 0.1-5mm
36	Body puller set	2	Shaft length approx. 320mm, hammer size approx. 50x110mm(φxL) Shaft length approx. 500mm, hammer size approx. 60x120mm(φxL) Shaft length approx. 600mm, hammer size approx. 70x160mm(φxL)
37	Body fender tool set	2	Various kind of dolly, curved spoon, flange tool, bumping hammer finishing hammer, rubber hammer
38	Booster cable	5	Cap. A 300, Cable dia. 14φx4.0m
39	Bolt clipper	2	Approx.cutting cap.16mm, overall length 900mm

No.	DESCRIPTION	Q'ty	SPECIFICATION
40	Cast iron anvil	5	Approx.50kg weight
41	Cast iron swage block	3	Approx.75kg weight
42	C-Clamp	3	Approx. opening 25mm
		3	Approx. opening 50mm
		3	Approx. opening 75mm
		3	Approx. opening 100mm
		3	Approx. opening 125mm
		3	Approx. opening 150mm
		3	Approx. opening 200mm
43	Chisel Punch set	2	Content various kind of chiesel and punch(Flat,cape type of chiesel and center, prick, long taper etc.punch)
44	Circuit tester	2	DCV 2/4/20/40,ACV 250/500, DCA 200m/20, Resistance x1/10/100, x1K Elec. Source 1.5Vx1
45	Cutting grinder	1	Cap.405 ϕ , 3ph.approx.2Kw
46	Diesel compression gauge	1	for Large vehicle, range approx. 0-6.86MPa
47	Dial indicator set	1	Gauge stroke 1.0mm, Min. graduation 0.01mm
48	Diff jack	2	Cap.500kg, approx.450mm lift, manual hydraulic operating
49	Drilling machine	3	Cap.13mm, power output 200w, Table approx. 240x240mm Overall height approx.950mm
50	Drain plug wrench	2	Universal type
51	Drain plug wrench set	2	Set contents various type of wrench
52	Drum pump	3	hand operate type, revolution type, Output volume approx. 1lt/rev.
53	Drum carrier	2	for drum can carrier, 250kg cap.
54	Double Sledge Hammer	5	approx. 2.7kg Normal weight, 800mm Length
55	Double offset box wrench set	3	Long type 45" contents 8x9,10x12,11x13,14x17,19x21,22x24,23x26mm
56	Double-face Sledge hammer	5	Approx. weight 1.8, 2.7, 3.5,4.5kg
57	Electric bench grinder	2	Approx. 300x30x25mm(Disk dimention O.DxThicknessxH.dia.mm) power input approx. 1700W
58	Electric drill	2	•Cap. Steel 13mm, power input appro. 600W, Drill chuck 13ELA, approx.1100/min. Non load speed with standard acce. Approx. weight 2.5kg
		2	•Cap. Steel 13mm, power input appro. 600W, Drill chuck 13ELA, approx.750/min. Non load speed with standard acce. Approx. weight 4.0kg
		2	•Cap. Steel 6.5mm, power input appro. 350W, Drill chuck 6.5EB, approx.2000/min. Non load speed with standard acce. Approx. weight 2.0kg


 AP-15




No.	DESCRIPTION	Q'ty	SPECIFICATION
59	Electric disk sander	1	Disk dia. 100mm, power input approx. 700W
60	Electric shear	1	Steel plate approx.2.9mm, 1-ph
61	Electric soldering iron	2	Cap. 60w and 150w
62	Engine brush	5	Brush height approx. 35mm
63	Engine service jack	1	Cap1500kg, approx.Min.height 340mm, approx.200mmlift
64	Files set	5	Nominal 250mm, medium cut, incld.Flat, Half-round, Round, Square and Triang.
65	Funnel	5	Dia. Approx.200mm
66	Garage lamp	5	10m cable, 10Afuse, w/bulb protector
67	Gasket cutting punch set	2	Contents 5,6,8,9,10,11,12,14,16 and mandrel
68	Grease gun	15	Cap.approx.40cc, Max.output press.approx.25MPa with hydraulic chuck nozzle length approx. 180mm, Micro hose for various kind of nipple.
69	Hack saw	3	Cutting range approx. 250-300
70	Hack saw blade	10	Approx. length 250mm, 24 teeth
71	Hand rivetter tool kit	1	Contents Hand rivetter range ϕ 2.4 ϕ 3.2 ϕ 4.0 ϕ 4.8, L-type,and blind and 3.2x6.0x6.4,3.2x7.6x6.4,4.0x6.6x7.9,4.0x9.8x7.9(DxLxA)rivet
72	Hand truck	3	approx.300kg cap.
73	Hand valve lapper	2	• ϕ 30
		2	• ϕ 35
		2	• ϕ 45
74	Hexagon wrench set	3	Set contents 2.5,3,4,5,6,8,10mm
75	Hexagon socket set	3	Set contents 60mm length, opening 5mm x 6,8,10,12,14,17mm
76	High Power Wrench	2	Torque Output approx. 500kg-m Torque Input approx. 50kg-m, Socket contained 21,41mm
77	High pressure car washer	1	Approx.Discharge volume1500l/h, 3-joint ceramic plunger pump. 7-8lt water, 3-ph, approx. 5kW motor, detergent tank cap. Approx.18lt auto-sunction supply detergent method.
78	High pressoure grease pump	1	Output pressure Max.24.5MPa, volume approx.3g/stroke, cap. Approx.15lt with standerd accessory
79	Hydraulic Garage Juck	5	•Cap. 5ton Saddle Height apporox. 150-550mm(Min.-Max) approx.Lift 400mm
		12	•Cap. 10ton Saddle Height apporox. 160-550mm(Min.-Max) approx.Lift 400mm

No.	DESCRIPTION	Q'ty	SPECIFICATION
80	Hydraulic spring juck	12	for replacement chassis spring, Cap approx.0.5-1.0ton
81	Hydraulic press	1	manual type, Cap.15ton, ram stroke approx.150mm, with standard acce.
82	Impact driver set	1	Consist 12.7mm(1/2")drive dody, adapter,(-),(+)large and small bit
83	Insulation tester	1	Testing V/MΩrange 500V/100MΩ, Appl. Measure range 0.1-100MΩ Measure V0-300V.
84	Integral hand screw driver	3	Approx. length 350,400mm
85	Iron bench level	1	Overall length approx.600mm
86	Lubrication drum set	2	with pump, air regurator, nozzle, etc.200lt drum, 5m H.P hose
87	Lubricator	3	•for oil, output pressur approx. 22.5MPa, air pressure approx.0.6MPa output volume 5-7lt/min, 20lts cap.
		3	•for grease, output pressure approx. 22.5MPa, air pressure approx.0.6MPa, output volume approx.350g/min.
88	Magnetic base	2	Overall height approx. 230mm support angle fixed
89	Magnetic finger	5	Approx.overall length 500mm
90	Mechanic Tool set	13	•for Medium Duty containing openend wrench,double offset box wrench 6,12point socket, extension bar,universal joint, Ratchet handle, Adj. wrench, screw driver,File etc.
		15	•for Large Vehicle containing openend wrench, double offset box wrench, 6,12point socket, extension bar,universal joint, Ratchet handle, Adj. wrench, screw driver,File etc. (approx.100 tools)
		2	•for Light Duty containing openend wrench,double offset box wrench 6,12point socket, extension bar,universal joint, Ratchet handle, Adj. wrench, screw driver,File etc.
91	Metal cutting snips	3	Approx. length 250mm, 1.2mm cutting cap., for left cut
		3	Approx. length 250mm, 1.2mm cutting cap., for right cut
		3	Approx. length 260mm, 1.4mm cutting cap., for straight cut
92	Moble floor crane	1	Cap.500-1000kg, hydraulic jack type, boom reach 1000-1700mm
93	Needle file set	3	Midium cut , incld.Flat, Half-round, Round, Square and Triang.
94	Oil drain	12	•Oil pan height approx.1000-1700mm, resorver cap. Approx.50lt
95	Oil bucket pump	3	Output volumu approx.40cc/stroke, container cap. 20lt, with H.P.hose
96	Oil sylinge	15	Cap. approx.150cc and 500cc
97	Oil measure	15	Approx.4lt cap. Made by polyethylene made with cap
98	Oil filter wrench	15	•Chain type approx.80-120mm
		15	•Chain type Max.160mm
99	Oiler	15	Approx.cap. 180cc, polyetylen made
		15	Approx.cap. 250cc, Aluminum-alloy

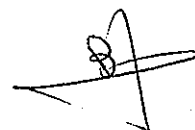
No.	DESCRIPTION	Q'ty	SPECIFICATION
100	Oil pressure gauge	1	Garad. Approx.0.68MPa, 1.9m hose
101	Oil stone	12	Grit 80,200
102	Oil seal puller	3 3	Oil seal dia.approx. 20-90φ Oil seal dia.approx. 50-150φ
103	Outside micrometer set	1	Contents 25,50,75,100,125,150MB
104	Parts washing stand	1	Motor cap.1ph.,200, tank cap. Approx.100lts oil and water
105	Piston ring compressor	2 3	•Cap.50-125mm •Cap.75-175mm
106	Piston filler gauge	1	Leaf overall length approx.200mm, Thickness 05,08,10,13,15,20,25,38mm
107	Piston ring tool	1	Cap. Approx.50-85mm
108	Pilot bearing puller	3 5	•Cap. Approx. 16-36φmm •Cap. Approx. 24-39φmm
109	Pitman arm puller	4	Jaw opening approx. 95mm for large vehicle
110	Plasti-gauge	3	Clearance range 0.025-0.076, green12
111	Plastic hammer	5 5	Approx.450g weight, overall length 300mm Approx.700g weight, overall length 320mm
112	Portable electric grinder	2	Extenal dia. 100mm, Thickness 19mm, Hole dia. 12.7mm, Power input 300W with grinding wheel
113	Portable hydraulic juck	15	Cap. 20ton
114	Polyetylen can	5	Cap.20lt. Red color
115	Porto power set	2	for cassis repair,approx. 20t cap.,Pump type, manual pump, ram, hose set
116	Quick hose connecter	10	Socket and Plug for 1/2Hose
117	Radiator cap tester	3	0-0.196MPa range with adopter set for Large Vehicle
118	Rigid Rack	15	Cap.6+6ton,Approx. 400mm(Min.height), 600mm(Max. height), 3legs
119	Screw plate	3	Medium taps and dies set(approx.26 kind each) with wrench, and handle
120	Screw extractor	3	Screwxbolt 6.5-19mm, drill type
121	Screw pitch gauge	2	Approx.28 Blandes, 60° Thread angle, Metric range
122	Scraper blade	10	Approx. overall length 190mm
123	Service creeper	10	approx.Bed dimention 400x900mm, Plywood made, Cast steel caster wheel

No.	DESCRIPTION	Q'ty	SPECIFICATION
124	Square	2	200x130(RxV),
125	Solder	5	Rosin-core wire 1.6 ϕ , 500g per roll
126	Straight edge	1	1000mm length, 50mm height, 6mm width, beveled 2mm
127	Snapping plier	5	• Cap. 19-40 ϕ , straight jaw
128	Solderless terminal kit	2	Various kind of terminals (Plug, socket, sleeve, conector etc.) incl. Terminal plier, case
129	Socket wrench set	12	• 12.7mm sq. drive 10-32mm (approx. 22 pieces) with ratchet handle, Ext. bar, Nut spinner handle, universal joint, sliding handle
		12	• 19mm sq. drive 21-50 (approx. 13 pieces) mm with ratchet handle, Ext. bar, Nut spinner handle, universal joint, sliding handle
		12	• 25.4mm sq. drive 35-63 (approx. 8 pieces) mm with ratchet handle, Ext. bar, Nut spinner handle, universal joint, sliding handle
130	Sound scope	1	Normal sound scope
131	Straight shank twist drill	1	approx. 25 pces with steel case
132	Stud remover	3	Contents 12.7mm square drive puller (6, 8, 10, 12mm)
133	Test hammer	8	Approx. 250g weight, overall length 400mm
134	Thread restorer	3	Cap. Dia 5-34mm
		3	Cap. Dia 33-52mm
135	Thickness gauge	2	Approx. blade length 65mm, 12.7, width, 25 leaves
136	Tire Inflator	5	0-10 kgf/cm ² graduation Floor Installation type
137	Tire Pressure gauge	8	For Truck 0.1-1.08MPa Apporox. 220mm length
138	Tire Lever	12	for OR Tire Overall Length approx. 750mm
		12	for Tubeless Tire Overall Length approx. 900mm
139	Tire Service Tool Set	12	Set contents
140	Tire Spreder	1	Air operate type, Max. tire opening approx. 350mm Applicable Tire size 5.00-12-11.00-20, Used Air Pressure apporox. 0.9MPa or more
141	Tie-rod end remover	3	For Large Vehicle, Jaw opening Approx. 28mm Over all length Approx. 450mm
142	Tie-rod end lifter	3	Approx. 130x65x45mm LxWxH
		3	Approx. 150x80x60mm LxWxH
143	Turning radius Gauge	1	For Large Vehicle Wheel weight allowance max. 5000kgf Diameter apporox. 370mm Angle Scale 60deg.

No.	DESCRIPTION	Q'ty	SPECIFICATION
144	Toe-in Gauge	1	Testing range approx.370mm, scale 10-0-10mm, Min. scale 0.2mm
145	Tubeless tyre canger	1	Rim capacity 16"-22.5", Max.wheel dia. 1200mm, max width approx. 500mm, Chuck Motor 3h 1-2kW Hydr. Pump motor approx. 1.5kW
146	Torque wrench	3 . 3 3 3	•Approx. Graduation 50-450kgf-cm, unit 10kgf-cm square drive9.5mm •Approx. Graduation 300-1900kgf-cm, unit 50kgf-cm square drive12.7mm •Approx. Graduation 5-28kgf-m, unit 0.5kgf-cm square drive19mm •Approx. Graduation 7-42kgf-m, unit 1kgf-cm square drive19mm
147	TORX socket wrench set	1	Contents 6.35-6.4sq.drive,T-type10,15,20,25,27, 9.5sq.drive, T-type30,40,45,50,9.5sq.drive Etype 8,10,12 and ratchet, extension, adapter
148	Tool tray	3 3 3 3	•approx.400x250x100(LxWxH)with handle •approx.600x450x150(LxWxH) •approx.450x300x120(LxWxH) •approx.900x600x150(LxWxH)
149	Tool and parts rack	15	Open type, 4-shelves, Approx. height 1800mm, width 1200mm
150	Transmission jack	1	Cap.1500kg, approx.700mm lift, Saddle inclination 30° Forward 15° Back ward
151	Transssmission bearing puller	1	for large vehicle, approx.cap. 60,70,80,90mm
152	Tube flaring and cutting tool	2	Pipe cutting cap.3-30mm, Flaring cap. 5,6,8,10,13,16φ, contents cutter, york holder,adaptor
153	Universal puller set	1	for Truck and Bus, containing Puller set, Wheel puller, Gear puller, Terminal puller, Slid hammer, gear puller
154	U-bolt nut wrench	5 5	•Opening 30x32mm leng. 600mm •Opening 32x36mm leng. 600mm
155	Valve spring tester	1	Cap. Approx.240kg, springφxL 80-210mm, with standard acces.
156	Valve lifter	1	Cap.50-225mm
157	Valve rubber cap	1 1 1	•φ30 •φ35 •φ45
158	Valve compound	1 1	•Cap.200g, Coarse •Cap.200g, Fine
159	V-block	2	Approx.100x70x40(LxHxD), Cast iron
160	Vernier caliper	3	Range 0-150mm, Min.graduation 0.05mm

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No.	DESCRIPTION	Q'ty	SPECIFICATION
161	Vertical lift	1	Cap.10ton, apporox.500mm lift, Air pressure 7-14kgf/cm ²
162	Vice grip plier	5	for general usage, approx. length 170mm
		5	for welding usage, approx. length 240mm
		5	for body usage, approx. length 450mm
163	Vice	3	Jow Width 150mm, Jaw opening 150mm, Roun top type
	Wheel Balancer	1	Capacity Max.150kg Wheel Diameter 13-23" Wheel Width4-15" Lift Capacity Approx.150kg Measuring range 0-900g
164	Wheel Dolly	5	Capacity apporox.500kg Applicable Tire 7.50-16-11.00-20 Min.-Max.Height of Lift arm apporox.70-500mm Manual Pump Type
165	Gas cutting tool-regurator set	1	incl. regurator, welding troch , cutting troch, hose, clamp, Valve, gloves back fire preventive devices, etc.
166	Hand truck	1	for gas welding
167	Wheel puller	3	For Large Vehicle
168	Wheel bearing puller	2	•for Medium trucks, bearing dia.100-130mm
		5	•for Large truck, bearing dia.140-170mm
169	Work Bench	15	approx. bench size 1700x600x700(LxDxH) 2drawer
170	Wire stripper	3	Cap. 0.5-2mm cord size
171	Wire brushes	5	4-row, 12-hole, approx. length 250mm
172	Wood mallet	5	Approx. Head dia.90mm, overall length 400mm

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Spare-parts requirement

For Large size Bus
For Medium size Bus
For Service truck


AP-22



65

for Large bus

DESCRIPTION	Unit	Q'ty
(for General maintenance parts)		
Engine oil filter	set	1500
Fuel filter	set	1500
Air element	set	200
(for Engine/Elec.)		
Fan belt	set	150
Injector nozzle	ea	30
Feed pump Inj.	ea	10
Thermostat water	ea	70
Water pum asm.	ea	2
W/pump repair kit	kit	10
Radiator asm	ea	3
Generator asm	ea	3
Stater asm	ea	3
Brush gen.	set	10
Brush sta.	set	10
Rotor gen.	ea	5
Rotor sta.	ea	5
Switch sta.	ea	5
(for Clutch)		
Disk asm	ea	20
Cover asm	ea	5
Master syl. Asm	ea	5
Master syl. Repair kit	kit	20
Clutch booster asm	ea	5
(for Brake/Hub)		
Repair kit brake cyl. FRT	kit	30
Repair kit brake cyl. RR	kit	30
Brake shoe asm. FRT	ea	10
Brake shoe asm. RR	ea	10
Brake lining set FRT	set	150
Brake lining set RR	set	200
Parking brake set	set	150
Spring return brake FRT	ea	200
Spring return brake RR	ea	200
Hub oil seal set FRT	set	100
Hub oil seal set RR	set	100
Bearing set FRT	set	5
Bearing set RR	set	5
Master syl. Asm	ea	5
Master syl. Repair kit	kit	20
Rim asm FRT	ea	50
Rim asm RR	ea	50

DESCRIPTION	Unit	Q'ty
(for Suspension)		
Spring asm FRT	ea	300
Spring asm RR	ea	200
U-bolt set FRT	set	100
U-bolt set RR	set	100
Center bolt FRT	ea	100
Center bolt RR	ea	300
Tie rod end asm RH	ea	20
Tie rod end asm LH	ea	20
Wheel nut set FRT RH	set	70
Wheel nut set FRT LH	set	70
Wheel nut set RR RH	set	70
Wheel nut set RR LH	set	70
Shock absorber FRT	ea	50
Shock absorber RR	ea	50
(for Power steering)		
Pump asm. Hyd.	ea	2
Gear set steering	set	2
(for Differential)		
All gear and bearing	set	6
(for Air/Exh brake)		
Head asm compressor	ea	3
Gasket kit comp. O/H	kit	5
EX brake asm(Cylinder)	ea	5
Cyl. Control EX brake	ea	5
(for Electrical)		
Head lamp asm	ea	20
Lamp asm Turn signal FRT RH	ea	20
Lamp asm Turn signal FRT LH	ea	20
Lamp asm Turn signal RR RH	ea	20
Lamp asm Turn signal RR LH	ea	20
Flasher unit	ea	20
Relay asm head lamp	ea	10
Starter relay	ea	10
Wiper motor	ea	10
Wiper blade set	set	20
(for Body)		
FRT glass asm(RH,LH) with wether strip(sealing mall)	ea	20
RR glass asm with wether strip(sealing mall)	ea	20
Side glass(passenger)	ea	20
Entrance glass	ea	10
Mirror asm side	ea	30

JAP-23

[Signature]

69

Medium bus

DESCRIPTION	Unit	Q'ty
(for General maintenance parts)		
Engine oil filter	set	500
Fuel filter	set	500
Air element	set	45
(for Engine/Elec.)		
Fan belt	set	50
Injector nozzle	ea	15
Feed pump Inj.	ea	5
Thermostat water	ea	25
Water pum asm.	ea	2
W/pump repair kit	kit	10
Radiator asm	ea	3
Generator asm	ea	2
Stater asm	ea	2
Brush gen.	set	5
Brush sta.	set	5
Rotor gen.	ea	2
Rotor sta.	ea	2
Switch sta.	ea	2
(for Clutch)		
Disk asm	ea	8
Cover asm	ea	2
Master syl. Asm	ea	3
Master syl. Repair kit	kit	8
Clutch booster asm	ea	2
(for Brake/Hub)		
Repair kit brake cyl. FRT	kit	15
Repair kit brake cyl. RR	kit	15
Brake shoe asm. FRT	ea	5
Brake shoe asm. RR	ea	5
Brake lining set FRT	set	50
Brake lining set RR	set	70
Spring return brake FRT	ea	80
Spring return brake RR	ea	80
Hub oil seal set FRT	set	50
Hub oil seal set RR	set	50
Bearing set FRT	set	3
Bearing set RR	set	3
(for Suspension)		
Spring asm FRT	ea	100
Spring asm RR	ea	100
U-bolt set FRT	set	50
U-bolt set RR	set	50
Center bolt FRT	ea	50
Center bolt RR	ea	150
Tie rod end asm RH	ea	10
Tie rod end asm LH	ea	10
Wheel nut set FRT RH	set	35

DESCRIPTION	Unit	Q'ty
Wheel nut set FRT LH	set	35
Wheel nut set RR RH	set	35
Wheel nut set RR LH	set	35
Shock absorber FRT	ea	20
Shock absorber RR	ea	20
(for Power steering)		
Pump asm. Hyd.	ea	1
Gear set steering	set	1
(for Differential)		
All gear and bearing	set	2
(for Air/Exh brake(if))		
Head asm compressor	ea	3
Gasket kit comp. O/H	kit	5
EX brake asm(Cylinder)	ea	5
Cyl. Control EX brake	ea	5
(for Electrical)		
Head lamp asm	ea	10
Lamp asm Turn signal FRT RH	ea	10
Lamp asm Turn signal FRT LH	ea	10
Lamp asm Turn signal RR RH	ea	10
Lamp asm Turn signal RR LH	ea	10
Flasher unit	ea	10
Relay asm head lamp	ea	5
Starter relay	ea	5
Wiper motor	ea	5
Wiper blade set	set	10
(for Body)		
FRT glass asm(RH,LH) with wether strip(sealing mall)	ea	10
RR glass asm with wether strip(sealing mall)	ea	10
Side glass(passenger)	ea	10
Entrance glass	ea	5
Mirror asm side	ea	15
Rim asm FRT	ea	10
Rim asm RR	ea	10

Service Truck

DESCRIPTION	Unit	Q'ty
(for General maintenance parts)		
Engine oil filter	set	20
Fuel filter	set	20
Air element	set	2
(for Engine/Elec.)		
Fan belt	set	8
Injector nozzle	ea	6
Feed pump Inj.	ea	2
Thermostat water	ea	2
Water pum asm.	ea	1
W/pump repair kit	kit	2
Radiator asm	ea	1
Generator asm	ea	1
Stater asm	ea	1
Brush gen.	set	2
Brush sta.	set	2
Rotor gen.	ea	1
Rotor sta.	ea	1
Switch sta.	ea	1
(for Clutch)		
Disk asm	ea	4
Cover asm	ea	1
Master syl. Asm	ea	1
Master syl. Repair kit	kit	3
Clutch booster asm	ea	1
(for Brake/Hub)		
Repair kit brake cyl. FRT	kit	2
Repair kit brake cyl. RR	kit	2
Brake shoe asm. FRT	ea	1
Brake shoe asm. RR	ea	1
Brake lining set FRT	set	6
Brake lining set RR	set	10
Spring return brake FRT	ea	10
Spring return brake RR	ea	10
Hub oil seal set FRT	set	6
Hub oil seal set RR	set	6
Bearing set FRT	set	1
Bearing set RR	set	1
(for Suspension)		
Spring asm FRT	ea	6
Spring asm RR	ea	6
U-bolt set FRT	set	10
U-bolt set RR	set	10
Center bolt FRT	ea	10
Center bolt RR	ea	10
Tie rod end asm RH	ea	3
Tie rod end asm LH	ea	3
Wheel nut set FRT RH	set	10

DESCRIPTION	Unit	Q'ty
Wheel nut set FRT LH	set	10
Wheel nut set RR RH	set	10
Wheel nut set RR LH	set	10
Shock absorber FRT	ea	5
Shock absorber RR	ea	5
(for Power steering)		
Pump asm. Hyd.	ea	1
Gear set steering	set	1
All gear and bearing	set	1
(for Air/Exh brake)		
Head asm compressor	ea	1
Gasket kit comp. O/H	kit	2
EX brake asm(Cylinder)	ea	2
Cyl. Control EX brake	ea	2
(for Electrical)		
Head lamp asm	ea	4
Lamp asm Turn signal FRT RH	ea	4
Lamp asm Turn signal FRT LH	ea	4
Lamp asm Turn signal RR RH	ea	4
Lamp asm Turn signal RR LH	ea	4
Flasher unit	ea	1
Relay asm head lamp	ea	1
Starter relay	ea	1
Wiper motor	ea	1
Wiper blade	ea	2
(for Body)		
FRT glass asm(RH,LH) with wether strip(sealing mall)	ea	1
RR glass asm (driver rr) with wether strip(sealing mall)	ea	1
Side glass(driver)	ea	1
Mirror asm side	ea	2

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Japan's Grant Aid Scheme

The Grant Aid scheme provides a recipient country with non-reimbursable funds to procure the facilities, equipment and services (engineering services and transportation of the products, etc.) for economic and social development of the country under principles in accordance with the relevant laws and regulations of Japan. The Grant Aid is not supplied through the donation of materials as such.

1. Grant Aid Procedures

Japan's Grant Aid scheme is executed through the following procedures.

Application	(Request made by a recipient country)
Study	(Basic Design Study conducted by JICA)
Appraisal & Approval	(Appraisal by the Government of Japan and Approval by Cabinet)
Determination of Implementation	(The Notes exchanged between the Governments of Japan and the recipient country)

Firstly, the application or request for a Grant Aid project submitted by a recipient country is examined by the Government of Japan (the Ministry of Foreign Affairs) to determine whether or not it is eligible for Grant Aid. If the request is deemed appropriate, the Government of Japan assigns JICA (Japan International Cooperation Agency) to conduct a study on the request.

Secondly, JICA conducts the study (Basic Design Study), using (a) Japanese consulting firm(s).

Thirdly, the Government of Japan appraises the project to see whether or not it is suitable for Japan's Grant Aid scheme, based on the Basic Design Study report prepared by JICA, and the results are then submitted to the Cabinet for approval.

Fourthly, the project, once approved by the Cabinet, becomes official with the Exchange of Notes (E/N) signed by the Governments of Japan and the recipient country.

Finally, for the smooth implementation of the project, JICA assists the recipient country in such matters as preparing tenders, contracts and so on.

2. Basic Design Study

1) Contents of the Study

The aim of the Basic Design Study (hereinafter referred to as "the Study"), conducted by JICA on a requested project (hereinafter referred to as "the Project") is to provide a basic document necessary for the appraisal of the Project by the Government of Japan. The contents of the Study are as follows:

- Confirmation of the background, objectives, and benefits of the requested project and also institutional capacity of agencies concerned of the recipient country necessary for the Project's implementation.
- Evaluation of the appropriateness of the Project to be implemented under the Grant Aid scheme from a technical, social and economic point of view.
- Confirmation of items agreed upon by both parties concerning the basic concept of the Project.

- Preparation of a basic design of the Project
- Estimation of costs of the Project

The contents of the original request are not necessarily approved in their initial form as the contents of the Grant Aid project. The Basic Design of the Project is confirmed considering the guidelines of Japan's Grant Aid scheme.

The Government of Japan requests the Government of the recipient country to take whatever measures are necessary to ensure its self-reliance in the implementation of the Project. Such measures must be guaranteed even though they may fall outside of the jurisdiction of the organization in the recipient country actually implementing the Project. Therefore, the implementation of the Project is confirmed by all relevant organizations of the recipient country through the Minutes of Discussions.

2) Selection of Consultants

For smooth implementation of the Study, JICA uses (a) registered consultant firm(s). JICA selects (a) firm(s) based on proposals submitted by interested firms. The firm(s) selected carry(ies) out a Basic Design Study and write(s) a report, based upon terms of reference set by JICA.

The consulting firm(s) used for the Study is(are) recommended by JICA to the recipient country to also work on the Project's implementation after the Exchange of Notes, in order to maintain technical consistency.

3. Japan's Grant Aid Scheme

1) Exchange of Notes (E/N)

Japan's Grant Aid is extended in accordance with the Notes exchanged by the two Governments concerned, in which the objectives of the Project, period of execution, conditions and amount of the Grant Aid, etc., are confirmed.

2) "The period of the Grant Aid" means the one fiscal year which the Cabinet approves the Project for. Within the fiscal year, all procedures such as exchanging of the Notes, concluding contracts with (a) consulting firm(s) and (a) contractor(s) and final payment to them must be completed.

However in case of delays in delivery, installation or construction due to unforeseen factors such as natural disaster, the period of the Grant Aid can be further extended for a maximum of one fiscal year at most by mutual agreement between the two Governments.

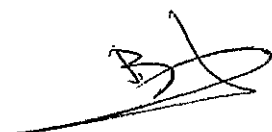
3) Under the Grant Aid, in principle, Japanese products and services including transport or those of the recipient country are to be purchased.

When the two Governments deem it necessary, the Grant Aid may be used for the purchase of the products or services of a third country.

However, the prime contractors, namely, consulting, contracting and procurement firms, are limited to "Japanese nationals". (The term "Japanese nationals" means persons of Japanese nationality or Japanese corporations controlled by persons of Japanese nationality.)

4) Necessity of "Verification"

The Government of recipient country or its designated authority will conclude contracts denominated in Japanese yen with Japanese nationals. Those contracts shall be verified by the Government of Japan. This "Verification" is deemed necessary to secure accountability to Japanese taxpayers.



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- 5) Undertakings required of the Government of the Recipient Country
In the implementation of the Grant Aid project, the recipient country is required to undertake such necessary measures as the following:
- a) To secure land necessary for the sites of the Project and to clear, level and reclaim the land prior to commencement of the construction.
 - b) To provide facilities for the distribution of electricity, water supply and drainage and other incidental facilities in and around the sites.
 - c) To secure buildings prior to the procurement in case the installation of the equipment.
 - d) To ensure all the expenses and prompt execution for unloading, customs clearance at the port of disembarkation and internal transportation of the products purchased under the Grant Aid.
 - e) To exempt Japanese nationals from customs duties, internal taxes and other fiscal levies which will be imposed in the recipient country with respect to the supply of the products and services under the Verified Contracts.
 - f) To accord Japanese nationals, whose services may be required in connection with the supply of the products and services under the Verified Contracts, such facilities as may be necessary for their entry into the recipient country and stay therein for the performance of their work.
- 6) "Proper Use"
The recipient country is required to operate and maintain the facilities constructed and equipment purchased under the Grant Aid properly and effectively and to assign staff necessary for this operation and maintenance as well as to bear all the expenses other than those covered by the Grant Aid.
- 7) "Re-export"
The products purchased under the Grant Aid should not be re-exported from the recipient country.
- 8) Banking Arrangements (B/A)
- a) The Government of the recipient country or its designated authority should open an account in the name of the Government of the recipient country in a bank in Japan (hereinafter referred to as "the Bank"). The Government of Japan will execute the Grant Aid by making payments in Japanese yen to cover the obligations incurred by the Government of the recipient country or its designated authority under the Verified Contracts.
 - b) The payments will be made when payment requests are presented by the Bank to the Government of Japan under an authorization to pay (A/P) issued by the Government of the recipient country or its designated authority.
- 9) Authorization to Pay (A/P)
The Government of the recipient country should bear an advising commission of an Authorization to Pay and Payment commissions to the Bank.

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Major Undertaking to be taken by Each Government

No.	Items	To be covered by Grant Aid	To be covered by Rwanda Side
1	To bear the following commissions to the Japanese bank for banking services based upon the B/A.		
	1) Advising commission of A/P		●
	2) Payment commission		●
2	To ensure unloading and customs clearance at port of disembarkation in recipient country.		
	1) Marine transportation of the products from Japan to the port of the recipient country	●	
	2) Tax exemption and custom clearance of the products at the port of disembarkation		●
	3) Internal transportation from port disembarkation to the project site	●	
3	To accord Japanese nations, whose service may be required in connection with the supply of the products and the services under the verified contract, such facilities as may be necessary for their entry into the recipient country and stay therein for the performance of their work.		●
4	To exempt Japanese nationals from customs duties, internal taxes and other fiscal levies which may be imposed in the recipient country with respect to the supply of the products and services under the verified contracts.		●
5	To maintain and use properly and effectively the facilities installed and equipment provided under the Grant Aid.		●
6	To bear all the expenses, other than those to be borne by the Grant Aid, necessary for the installation of the facilities as well as for the transportation of the equipment.		●

(B/A: Banking Arrangement, A/P: Authorization to Pay)

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[Signature]

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4-2 M/D on June.9, 2005

MINUTES OF DISCUSSIONS
ON THE BASIC DESIGN STUDY
ON THE PROJECT FOR REHABILITATION OF THE PUBLIC TRANSPORT
IN THE REPUBLIC OF RWANDA
(EXPLANATION ON DRAFT REPORT)

In February 2005, the Japan International Cooperation Agency (hereinafter referred to as "JICA") dispatched a Basic Design Study Team on the Project for Rehabilitation of the Public Transport (hereinafter referred to as "the Project") to the Republic of Rwanda (hereinafter referred to as "Rwanda"), and through discussion and field survey, and after technical examination of the results in Japan, JICA prepared a draft report of the study.

In order to explain and to consult the Rwanda on the components of the draft report, JICA sent to Rwanda the Draft Report Explanation Team (hereinafter referred to as " the Team "), which is headed by Yuki Aratsu, Team Director, Transportation and Electric Power Team, Project Management Group I, Grant Aid Management Department, JICA from June 5 to June 10, 2005.

As a result of discussions, both parties confirmed the main items described on the attached sheets.

Kigali, June 9, 2005



Yuki Aratsu
Leader
Draft Report Explanation Team
Japan International Cooperation Agency

Emmanuel Nsanzumuganwa
Secretary General
Ministry of Infrastructure
Republic of Rwanda

Esdras Nkundumukiza
Managing Director
Office National des Transports en Commun
(ONATRACOM)
Republic of Rwanda



ATTACHMENT

1. Contents of the Draft Report

The Rwandan side agreed and fully accepted the contents of the draft report explained by the Team.

2. Japan's Grant Aid scheme

The Rwandan side understands the Japan's Grant Aid Scheme and the necessary measures to be taken by the Government of Rwanda as explained by the Team and described in Annex-4 and Annex-5 of the Minutes of Discussions signed by both parties on February 23, 2005.

3. Schedule of the Study

JICA will complete the final report in accordance with the confirmed item and send it to the Government of Rwanda by August, 2005.

4. Other relevant issues

4-1. The Rwandan side requested technical cooperation for the following field to operate procured buses properly and efficiently, and understood that the official request shall be submitted to the Government of Japan through Ministry of Foreign Affairs & Cooperation of Rwanda by middle of August 2005.

1) Technical Cooperation Project for Transport Network Planning, Management of Workshop Operations and Financial Management of ONATRACOM

2) Dispatch of JOCV and Training Program (in Japan) for improvement of technical skill of the Workshop Mechanics (the request for JOCV already submitted)

The Team understood the necessity of the technical cooperation measures and will convey the request to JICA headquarter.

4-2. The Team explained the implementation schedule of the Project being divided into two phases and requested the Rwandan side to enhance the operation and maintenance systems in stages.

The Rwandan side accepted the proposed implementation schedule. The Rwandan side shall recruit the necessary staffs (Driver, Conductor, Mechanics and others) and train the recruited staffs until the buses will be procured. And also the Rwandan side shall make the budget allocation plan for the proper and efficient operation of the procured buses of the Project.

4-3. The Rwandan side requested again that the main structures of the procured buses such as chassis and engine shall be product of Japan because of the existing buses, all of which are products of Japan, empirically proven to be strong and suitable for the bad road condition in

Rwanda and be economical and favorable from the viewpoint of maintenance.

The Team confirmed the necessity of the request.

4-4. The Team handed one copy of the draft specification of the equipments to The Rwandan side, and the Rwandan side understood it shall be confidential to third parties in order to secure the fairness of the tender of the Project.

4-5. The Rwandan side requested minor modification on the interior design (seat, luggage shelf) of the inter-city buses (18 nos. of large buses), and the Team agreed to consider the request into the final specification.

Handwritten signatures and initials in black ink, including a large stylized signature on the left, a small 'x' in the middle, and another signature on the right.

