
Chapter 2 Effective Approaches for Transportation

2-1 Transportation Objectives and Issues

2-1-1 Transportation Objectives

Transportation infrastructure needs are becoming more diverse, and not only is quantity (infrastructure stock) important, but quality (service) is also required.

The objective of transportation is to “facilitate the smooth movement of people and goods, thereby promoting economic development and improving living standards.”

“The smooth movement of people and goods” encompasses four types of movement, (i) regional and international movements that go beyond a single country (international cross-border transportation), (ii) national movement within a single country (national transportation), (iii) everyday movements within urban areas (urban transportation), and (iv) everyday movements in rural areas (rural transportation). Measures are required to meet the needs of each of these four types of movement.

Transportation measures aimed at achieving this should be implemented under a system of transportation administration based on an appropriate understanding of the needs involved, and should provide people with transportation systems consisting of a combination of (i) transportation infrastructure (roads, railway tracks, etc.), (ii) means of transportation (automobiles, trains, etc.) and (iii) transportation services (bus and air transportation services, etc.). Efficient transportation systems achieve faster travel, facilitate movement and secure means of transportation so as to achieve the goal of “the smooth movement of people and goods.” The end result of providing these opportunities for movement and activity is that “economic activity is revitalized, contributing to increased income for people and improvements in living environments.”

Transportation objectives: To revitalize economies, contributing to increased income and improved living environments by facilitating the smooth movement of people and goods.

Transportation needs and types of movement in developing countries generally vary widely depending on the current situation in the particular location concerned. Since there are restrictions on the human and financial resources that can be allocated to transportation infrastructure and facilities development, it is crucial to appropriately understand the four types of movement, and to allocate priority levels to the issues that require attention.

2-1-2 Issues in Transportation

One of the most important issues facing the transportation sector in developing countries is the increasing number of automobiles due to the increasing rate of motorization. However, developments in road infrastructure are unable to keep up with this rapidly increasing number of automobiles, and particularly in urban areas, traffic congestion is reaching the saturation point and causing adverse environmental effects due to exhaust emissions and severe noise

Transportation issues: (i) traffic congestion and accidents due to rapidly rising numbers of automobiles, (ii) disparities in the convenience provided by transportation, (iii) poor maintenance and deteriorating infrastructure due to revenue shortages, etc.

New issues: (i) efforts towards cross-border infrastructure, (ii) fundamental development required for achieving the civil minimum, (iii) ensuring effective transportation administration (finances, human resources), etc.

pollution.

Furthermore, maintenance of roads is not being implemented due to revenue shortages, and existing roads continue to deteriorate. Similarly, maintenance of other transportation modes such as railways, ports and airports, is also falling behind due to revenue shortages thereby leading to further deterioration of the infrastructure, effectively inhibiting “the smooth movement of goods and people.”

Traditional restrictive administration systems have been ineffective and unsuitable for appropriately dealing with each of the four different types of movement. To be able to move forward, a transition towards administration systems that respond flexibly to each of these different issues is essential, and capacity building in transportation administration and operation systems is extremely important. Several initiatives are being implemented as part of flexible administration systems, including deregulation aimed at supplementing and strengthening shortages in public sector funding capacity, technological capacity, and business capacity, PPPs aimed at actively encouraging private sector participation, the enhancement of participatory approaches that strongly reflect the opinions of beneficiaries in development plans, and Community Driven Development (CDD)¹⁶ efforts.

In the future, it is also essential that various systems be improved and upgraded so that the intended effects of these efforts can be sufficiently achieved.

2-2 Effective Approaches for Transportation

2-2-1 Creating the “Development Objectives Chart”

The Transportation Development Objectives Chart provides a comprehensive outline of the important development issues that must be addressed in order to achieve “the smooth movement of people and goods” in developing countries. There are various ways to describe the transportation-related development issues, as follows: (i) by transportation modes like roads and railways, (ii) by “hard” (physical) and “soft” (social, policy, etc.) considerations or (iii) by different roles of the public and private sectors. However, these approaches would make it difficult to clarify the relevance to the transportation objective of facilitating “the smooth movement of people and goods.” This report should provide a comprehensive treatment of the development issues required for achieving this transportation objective with the intention that strategies for improvements in the form of cooperation programs will be proposed. Therefore, classifications are made according to the four different types of movement

Development Objectives: Organized into five categories: (i) capacity development, (ii) internationalization and regionalization, (iii) national, (iv) urban, and (v) rural.

¹⁶ Community Driven Development (CDD) is a concept advocated by the World Bank regarding development assistance aimed at poverty reduction. It is an approach that bases management of the decision making process, and of local residents and regional resources for development efforts within the region under development. CDD seeks to entrust responsibility to community groups that serve public functions. It is also a useful regional development scheme when looked at from the perspective of encouraging local administrative autonomy, and sustainable development assistance. (Refer to the World Bank’s website under “Community Driven Development.”)

discussed above, and the structure of the individual issues is described as Development Objectives. In addition, “Capacity Development” is taken up as a common Development Objective required for achieving each of these four Development Objectives.

With regard to Mid-term Objectives and their Sub-targets, the chart has also been constructed so that, as the steps aimed at achieving Sub-targets, strategies and measures are comprehensively listed. This is so that the relationship between objectives and actual measures is clear for issues relating to each of the transportation modes.

Development Objectives for the transportation sector are described as follows:

Development Objective 1: Capacity Development of the Transportation Sector

Facilitating the sustainable development of transportation infrastructure through administrative reform and improvements to the market environment in the transportation sector.

Development Objective 2: Toward Internationalization and Regionalization (International Cross-border Transportation)

Providing support for internationalization and regional integration by minimizing barriers to movement and international cross-border transportation from a global perspective and from the perspective of regional economic zones.

Development Objective 3: Toward Balanced Development of a Whole Country (National Transportation)

Invigorating the developing regional capacity and potential, and achieving balanced interregional development by improving infrastructure to secure the national minimum in a way that takes into account the particular characteristics of the various transportation modes available, including roads, railways, air and maritime transportation.

Development Objective 4: Toward Sustainable Urban Development and Improvement of Urban Life (Urban Transportation)

Ensuring equal mobility for all people by providing integrated and participatory approaches to traffic congestion, traffic accidents, and urban environmental improvements.

Development Objective 5: Toward Sustainable Rural Development and Improvement of Rural Life (Rural Transportation)

Improving living standards and revitalizing the rural economy by securing the civil minimum by providing transportation infrastructure.

Direct and indirect effects on the social and natural environments caused by infrastructure development cannot be avoided. With regard to transportation infrastructure development, environmental and social issues must always be addressed during the consensus-building process. Consequently, strengthening with regard to environmental capabilities is an important issue in relation to transportation implementation systems, and is therefore included in the

Table 2-1 Transportation Issues Development Objectives–Mid-term Objectives–Sub-targets

Development Objective	Mid-term Objective	Sub-targets of Mid-term Objective
1. Capacity Development of the Transportation Sector	Strengthening of Transportation Sector Administration	Clarification of Authority and Responsibility as well as Capacity Development of Central Government
		Capacity Development of Local Governments in the Progressing Decentralization
		Promotion of Private Sector Participation in the Development of Transportation Infrastructures and Provision of Transportation Services
	Updating of Transportation Laws and Regulations	Revision of Laws and Regulations regarding Provision of Transportation Services
		Revision of Laws and Regulations with a view to Market Economy and Decentralization
		Revision of Laws and Regulations as well as Capacity Development with a view to Promoting Private Sector Participation
	Strengthening of Transportation Sector Financing	Diversification of Financial Sources of the Government
		Appropriate Distribution of Transportation Fund to Central and Local Governments
		Introduction of Benefit Principle
	Human Resource Development	Utilization of Private Capital
		Human Resource Development of the Public Sector
		Human Resource Development of the Private Sector
2. Toward Internationalization and Regionalization (International Cross-border Transportation)	Facilitation of International Movement of People and Goods	Development of International Transportation Network (Road/Railway/Airport/Port)
		Standardization and Modernization of Technologies Applied to International Transportation Network
		Strengthening of Safety and Security Measures
	Expedition of Cross-border Processing	Application of International Standards
		Facilitation and Expedition of Import/Export Processing
		Improvement of International Border Crossing Systems
3. Toward Balanced Development of a Whole Country (National Transportation)	Improvement of Road Transportation	Improvement and Development of Trunk Road System
		Strengthening of Road Maintenance System
		Normalization and Standardization of Roads and Road Traffic
		Improvement of Road Transportation Services
	Improvement of Railway Transportation	Restoration, Improvement and Development of Railway Network
		Strengthening of Railway Maintenance System
		Normalization and Standardization of Railway System
		Management Improvement and Privatization
	Improvement of Maritime Transportation	Restoration, Improvement and Development of Ports and Port Facilities
		Strengthening of Port Maintenance System
		Normalization and Standardization of Port System
		Improvement of Port Operation and Management
	Improvement of Air Transportation	Promotion of Maritime Transportation
		Improvement/Development of Airport Facilities
		Improvement/Development of Aeronautical Navigation Aid System
		Strengthening of Airport Facility Maintenance System
	Strengthening of Intermodal Transportation as well as Improvement of Issues Common to All Modes of Transportation	Normalization and Standardization of Air Transportation System
		Improvement of Airport Operation and Management
		Development and Introduction of Intermodal Transportation System
		Facilitation of Intermodal Connection
4. Toward Sustainable Urban Development and Improvement of Urban Life (Urban Transportation)	Improvement and Development of Urban Transportation Infrastructure	Traffic Capacity Increase for Arterial Roads, Intersections and Bridges Under the Jurisdiction of Central Government
		Restoration and Improvement of Secondary Roads and their Maintenance System under the Jurisdiction of Local Government
		Promotion of Private Sector Participation in Urban Transportation through PPPs
	Improvement and Development of Urban Public Transportation Services	Improvement of Bus Services
		Introduction of Rail-based Public Transportation Services including MRT and LRT
		Management Improvement of Public Transportation Service Providers
	Transportation Demand Management (TDM)	Promotion of Modal Shift from Private Cars to Public Transportation Services
		Optimization of Urban Transportation Demand
	Enhancement of Transportation Safety	Improvement of Urban Transportation Operation and Management
		Traffic Safety Education
		Enforcement of Traffic Safety Laws and Regulations
	Prevention/Improvement of Environmental Deterioration due to Urban Transportation	Improvement of Traffic Safety Technology
Exhaust Gas Emission Control		
Improvement of Road Infrastructure and Facilities in view of Preventing Environmental Degradation		
5. Toward Sustainable Rural Development and Improvement of Rural Life (Rural Transportation)	Improvement of Rural Transportation Infrastructure	Introduction of Policy Measures to mitigate Urban Environmental Degradation
		Provision of Basic Transportation Infrastructure and Services to Secure Civil Minimum
	Improvement of Rural Public Transportation Services	Enhancement of Transportation Safety and Reliability
		Maintenance and Improvement of Public Transportation Services with a view to Satisfying Civil Minimum
		Provision of Transportation Services for Better Living Standard
	Enhancement of Sustainability of Rural Transportation Systems	Improvement of Safety and Reliability of Public Transportation Services
Improvement of Funding Mechanisms for Rural Transportation		
		Supporting Private Sector and Technicians to Study Technologies suitable for Locality
		Establishment of Road Development and Maintenance Systems based on Participatory Local People

Development Objectives Chart. In relation to actual environmental strategies, Appendix 5 organizes and describes measures in relation to environmental strategies according to each Development Objective.

Development Objective 1:
Capacity Development of
the Transportation
Sector

2-2-2 Effective Approaches for Transportation

Development Objective 1: Capacity Development of the Transportation Sector

A problem faced by many developing countries is that the various systems, implementation frameworks and individuals are unable to deal adequately with contemporary issues including deregulation, the separation of policy-making and implementation, the introduction of private sector participation, and decentralization.

The transportation sector in some countries faces problems such as non-transparent contracting systems and corruption since sufficiently large amounts of funding are allocated to transportation infrastructure development. Thus, the establishment of good governance is therefore an important issue. These types of problems are brought on by the concentration of authority in certain central government agencies. To some extent, this is one of the reasons behind the promotion of initiatives for achieving the decentralization of authority, such as deregulation, the separation of policy-making and implementation branches, the introduction of private sector participation, and decentralization.

In order to facilitate the continuous growth of the transportation sector and respond to the various issues, environmental improvements that promote such sectoral growth must be implemented, and the environment itself must be continually transformed in accordance with the progress of that growth.

Mid-term Objective 1-1:
Clarification of authority and responsibility as well as capacity development of central government;
Capacity development of local governments in the progressing decentralization;
Promotion of private sector participation in the development of transportation infrastructures and provision of transportation services

Mid-term Objective 1-1: Strengthening of Transportation Sector Administration

A central issue in strengthening transportation sector administration is the appropriate allocation of policy-making, planning, monitoring, and implementation roles to relevant parties, and the assignment of authority relevant to those particular roles. Based on appropriate recognition of these issues, international assistance provided by the World Bank and other parties in many developing countries is actively promoting the division of policy-making and implementation branches, the separation of departments directly responsible for managing activities and decentralization.

Central governments must perform higher-level policymaking, coordination and managerial functions (separate administration of each transportation mode, promotion of coordination among modes, creation of uniform standards, management of relevant statistics, coordination with related development plans, etc.), and this can be facilitated by the division of policymaking and implementation branches, and the separation of departments directly responsible for managing activities.

Important issues in relation to decentralization are (i) the transfer of authority and control of sources of funds from central to local governments, (ii)

the improvement of administrative systems of local governments and (iii) human resources development relating to local government administration. While the situation with regard to the transfer of authority and finances from central to local governments differs across countries, the greatest problem faced, even if authority and finances have actually been transferred, is disorganization and confusion due to inadequate local government capacity for handling these roles. The administrative capacity of local governments has traditionally been low, and there are cases of functional paralysis occurring because decentralization proceeded before this situation was first rectified. There is an urgent need for the establishment of systems, and the strengthening of institutional capacities and human resources.

Sub-target 1: Clarification of Authority and Responsibility as well as Capacity Development of Central Government for Transportation Administration

Sub-target 2: Capacity Development of Local Governments in the Progressing Decentralization for Transportation Administration

Sub-target 3: Promotion of Private Sector Participation in the Development of Transportation Infrastructure and Provision of Transportation Services

JICA's Activities

JICA has various activities in relation to Mid-term Objective 1-1. These include the proposal of systems reforms through Development Studies, as well as partial capacity development of systems through pilot projects, advice from experts, and group and country-specific training. However, in order to achieve visible outcomes from cooperation aimed at strengthening the capacity of systems, it is essential for JICA to enhance traditional cooperation efforts and establish Technical Cooperation Projects that have the specific objective of capacity development, and strive to produce comprehensive outcomes by combining the benefits of the various schemes.

Mid-term Objective 1-2:
Revision of laws and regulations regarding provision of transportation services; Revision of laws and regulations with a view to market economy and decentralization; Revision of laws and regulations as well as capacity development with a view to promoting private sector participation

Mid-term Objective 1-2: Updating of Transportation Laws and Regulations

One objective of updating transportation laws and regulations is the stabilization of administration systems in the sector, and the clarification of the allocation of roles and authority amongst related parties in order to facilitate the provision of transportation services in a smooth manner. Therefore, improvements to the legal system are required in the form of improvement laws and administration laws that comprehensively regulate transportation sector administration systems. Furthermore, in order to standardize the level of services provided, it is essential to develop various standards relating to design, construction, environmental considerations, safety, and so forth, and to ensure that such standards are in conformity by establishing institutional systems that will be appropriately operated and monitored.

In order to implement new policies in the transportation sector such as deregulation and the introduction of private sector participation, it is essential to develop new legal systems by updating and reforming existing legal frameworks.

In order to utilize the financial, technological and business capacities of the private sector, it is essential to clarify what type of work roles will be allocated to government and the private sector over the long term: from the construction of transportation infrastructure through its operation and maintenance. In particular, it is essential to pursue actions that encourage proactive private sector participation by clarifying what proportion of responsibility will be covered by the government in relation to perceived risks. At the same time, it is essential to monitor and guide activities in the desired direction in order to ensure that appropriate deregulation and private sector participation, and fair competition occur under the new systems.

Sub-target 1: Revision of Laws and Regulations regarding Provision of Transportation Services

Sub-target 2: Revision of Laws and Regulations with a view to Market Economy and Decentralization

Sub-target 3: Revision of Laws and Regulations as well as Capacity Development with a view to Promoting Private Sector Participation

JICA's activities

JICA's activities in relation to Mid-term Objective 1-2, particularly in the transportation sector, are extremely limited and consist only of partial cooperation in the form of expert dispatches and training. The introduction of private sector participation to overcome the limited financial, technological and business capacities of the public sector in order to facilitate transportation infrastructure development and the improvement of services is an important initiative worth pursuing. In the future, positively promoting technical cooperation with reference to actual domestic examples in Japan should also prove to be a beneficial activity.

Mid-term Objective 1-3:
Diversification of financial sources of the government; Appropriate distribution of transportation fund to central and local governments; Introduction of the benefit principle; Utilization of private capital

Mid-term Objective 1-3: Strengthening of Transportation Sector Financing

In order to increase the provision of transportation services, it is necessary to enhance finances to the required levels by either improving the funds procurement capacity of government, or by attracting outside funding, such as from the private sector.

There are many areas in the transportation sector where private sector participation cannot be expected such as road infrastructure development not accompanied by fee income. Various types of measures for enhancing finances have been implemented involving the benefit principle in an effort to supplement public sector transportation finances. Examples include the establishment of earmarked revenue sources for roads with fuel taxes as a base component, the provision of local resident labor for rural road development and levies in the form of environmental taxes in urban areas. When utilizing the benefit principle in enhancing finances, it is crucial that systems be established in such a way that there is an equal allocation of responsibilities and that spending is appropriate. When utilizing earmarked revenue sources for roads, a

beneficial approach is to form a “roads committee” made up of road users, transportation companies, road administration personnel and the like, in order to deliberate on priorities for uses of such funds, and to increase the transparency and accountability of project implementation through monitoring, among others.

With regard to areas where private sector participation can be expected, such as the operation and maintenance of heavily congested roads and the operation of public transportation services, improvements to the commercial environment through deregulation, for example, are essential. This is because this facilitates public-private cooperation geared towards attracting private sector financing. Finally, developing and revitalizing financial markets makes it easier for both government and the private sector to procure funds, so this is also a significant undertaking that must be considered.

Sub-target 1: Diversification of Financial Sources of the Government

Sub-target 2: Appropriate Distribution of Transportation Fund to Central and Local Governments

Sub-target 3: Introduction of the Benefit Principle

Sub-target 4: Utilization of Private Capital

JICA's Activities

JICA's activities with regard to Mid-term Objective 1-3 are reasonably adequate and not limited to expert dispatches and training, but also involve the preparation of proposals for appointed revenue sources of road funding through Development Studies. However, there are issues requiring modification, particularly in the limited provision of Japanese examples rather than formulating practical proposals based on actual circumstances in partner countries. In the future, it is crucial for JICA to emphasize the relationship between poverty reduction and transportation infrastructure development, and examine new methods wherein local residents, local governments and international cooperation can work together towards improving access to rural areas given the limited finances available.

Regarding the utilization of private sector capital, while some Development Studies do contain related proposals, they are limited to proposals for such capital as one part of overall funding, and do not provide practical investigations or advice that correspond with the actual circumstances in partner countries.

Mid-term Objective 1-4:
Human resource
development of the public
sector; Human resource
development of the private
sector

Mid-term Objective 1-4: Human Resource Development

Human resource development is essential so that personnel involved in the provision of transportation services are able to fulfill their allocated roles effectively.

Human resource involved in the provision of services can be divided into government employees who develop policies and plans and monitor activities, and private sector companies actually involved in carrying out those activities. With regard to government officials, it is essential to utilize capacity development organizations and establish an environment where central and local government officials can efficiently improve their skills. With regard to private

sector personnel, along with the enhancement of specialist education and training, an effective approach is to provide incentives for skills enhancement through such training and education, by jointly implementing subsidies for training and prior examination systems for project tenders.

Sub-target 1: Human Resource Development of the Public Sector

Sub-target 2: Human Resource Development of the Private Sector

JICA's Activities

Activities relating to capacity development are not limited to Technical Cooperation Projects, expert dispatches and training, but are also being actively pursued through Development Studies. JICA has demonstrable outcomes in establishing training centers, formulating curriculums and dispatching instructors, among others, as part of training activities intended for government personnel and capacity strengthening activities intended for private sector employees such as maritime personnel and civil engineers. JICA also has experience regarding the construction of education and training centers, and the like, through Grant Aid.

Development Objective 1: Capacity Development of the Transportation Sector

Mid-term Objective 1-1: Strengthening of Transportation Sector Administration		
Sub-targets of Mid-term Objective	Examples of Activities for Achieving Sub-targets	JICA's Major Activities
Clarification of Authority and Responsibility as well as Capacity Development of Central Government	Establishment/Improvement of Operation and Policy of Transportation Infrastructure/Projects	Road Engineering and Administration (Tr), Road Administration with Focus on Maintenance and Management, and Safety Measures (India) (TCP)
	Establishment of Management Systems by Transportation Modes and Strengthening of Coordination among Management Body	The Study on the National Transportation Development Strategy in Viet Nam (Viet Nam) (DS)
	Development of Transportation Databases	The Study on Metro Manila Urban Transportation Integration (Phases I and II) (the Philippines) (DS), National Transportation Plan (Pakistan) (DS)
	Coordination with National Development Plan	The Study on the National Transportation Development Strategy in Viet Nam (Viet Nam) (DS)
	Administrative Improvement/ Privatization of Public Managed Transportation Company	Study on Privatization of Polish State Railways (Poland) (DS), Study on Tariffs and Improved Cost Recovery for Egyptian National Railways: Alternative Study (Egypt) (DS), Railway Management Planning (Tr), Shipping Administration (Tr), National Transportation Plan (Poland) (DS)
	Strengthening with Environmental Issues Capability	(also dealt with under "Pollution Control" activities) Study on Integrated Urban Transportation Strategies for Environmental Improvement in Kuala Lumpur (Malaysia) (DS), Comprehensive Urban Transportation Study in Barranquilla (Colombia) (DS)
Capacity Development of Local Governments in the Progressing Decentralization	Strengthening of Management Capability of Local Governments	The Study on Rural Roads Improvement in Western Kenya (Kenya) (DS), Periodic Maintenance of Capacity Building for Regional Office (East Timor) (TCP)
	Coordination Between Urban Planning and Regional Master Plans	The Study on an Improvement Plan for Railway Transport in and around the Bangkok Metropolis in Consideration of Urban Development (Thailand) (DS)
	Establishment of Coordination Systems Between Central Government and Local Government	Master Plan Study on Long-term Management of Bulgarian Railways (Bulgaria) (DS)
Promotion of Private Sector Participation in the Development of Transportation Infrastructures and Provision of Transportation Services	Promotion of Deregulation	The Establishment of the Public-Private Participation Technique of Metro Manila Urban Expressway Construction (the Philippines) (DS), Feasibility Study on the Construction of Expressways in the National Capital Region in India (India) (DS)
	Creation of Enabling Environments for Public and Private Sector Cooperation	

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Mid-term Objective 1-2: Updating of Transportation Laws and Regulations		
Sub-targets of Mid-term Objective	Examples of Activities for Achieving Sub-targets	JICA's Major Activities
Revision of Laws and Regulations regarding Provision of Transportation Services	Formulation/Improvement of a Law on Transportation Maintenance	Regulation and Type Approval System for Safety and Environmental Protection of Motor Vehicle (Tr), Seminar on Road Administration (Tr)
	Formulation/Improvement of a Law on Transportation Operation and Management	National Transportation Plan (Poland) (DS)
	Formulation of Transportation Standards (Design, Construction, Environment and Safety, etc.)	The Study on the Standardization for Integrated Railway Network of Metro Manila (the Philippines) (DS), The Study on the Standardization of Bridge Design (Malaysia) (DS)
	Establishment of Operation/Monitoring Systems for Law/Standard Enforcement	Motor Vehicle Inspection and Maintenance System (Tr), Regulation and Type Approval System for Safety and Environmental Protection of Motor Vehicle (Tr), Seminar on Road Administration (Tr)
Revision of Laws and Regulations with a view to Market Economy and Decentralization	Decentralization	
	Deregulation/Privatization	Study on Privatization of Polish State Railways (Poland) (DS), The Establishment of the Public-Private Participation Technique of Metro Manila Urban Expressway Construction (the Philippines) (DS), Feasibility Study on the Construction of Expressways in the National Capital Region in India (India) (DS)
	Improvement of Tender/Procurement Processes	The Establishment of the Public-Private Participation Technique of Metro Manila Urban Expressway Construction (the Philippines) (DS)
Revision of Laws and Regulations as well as Capacity Development with a view to Promoting Private Sector Participation	Establishment of a Law on Toll Roads	The Establishment of the Public-Private Participation Technique of Metro Manila Urban Expressway Construction (the Philippines) (DS), Feasibility Study on the Construction of Expressways in the National Capital Region in India (India) (DS)

Mid-term Objective 1-3: Strengthening of Transportation Sector Financing		
Sub-targets of Mid-term Objective	Examples of Activities for Achieving Sub-targets	JICA's Major Activities
Diversification of Financial Sources of the Government	Introduction of Special Taxes for Specific Purposes/Specific Revenue Sources	The Study on the Standardization for Integrated Railway Network of Metro Manila (the Philippines) (DS)
	Administrative Improvement of Public Managed Transportation company	National Transportation Plan (Poland) (DS), Study on Tariffs and Improved Cost Recovery for Egyptian National Railways: Alternative Study (Egypt) (DS), The Feasibility Study of the Proposed Cavite Busway System (the Philippines) (DS)
	Fosterage/Strengthening of Financial Organization	Study on Development of Domestic Maritime Transportation and Marine Industry (Indonesia) (DS)
Appropriate Distribution of Transportation Fund to Central and Local Governments	Financial Arrangements for Local Governments	
Introduction of the Benefit Principle	Introduction of User Tax/Fee (Passenger Duty)	Transportation Master Plan and Feasibility Study of Urban Transportation Projects in Greater Cairo Region (Egypt) (DS), Study on Integrated Transportation Master Plan for JABOTABEK (Indonesia) (DS)
Utilization of Private Capital	Promotion of Deregulation	Study on Pan-Philippine Highway Ferry Service Plan (the Philippines) (DS)
	Creation of Enabling Environments of framework for Promotion of Public-Private Partnership	The Establishment of the Public-Private Participation Technique of Metro Manila Urban Expressway Construction (the Philippines) (DS), Feasibility Study on the Construction of Expressways in the National Capital Region in India (India) (DS)
	Provision of Incentive for Private Sector Participation in the Transportation Sector	Study on the Subic Bay Port Master Plan in the Republic of the Philippines (DS), Study on Urban Redevelopment Plan and Case Study in the Bangkok Metropolitan Area in the Kingdom of Thailand (DS)
	Institutional Setup for Promoting Finance to Transportation Sector both Internationally and Domestically	The Establishment of the Public-Private Participation Technique of Metro Manila Urban Expressway Construction (the Philippines) (DS), Feasibility Study on the Construction of Expressways in the National Capital Region in India (India) (DS)

Mid-term Objective 1-4: Human Resource Development		
Sub-targets of Mid-term Objective	Examples of Activities for Achieving Sub-targets	JICA's Major Activities
Human Resource Development of the Public Sector	Establishment of Efficient Capacity Development Systems	Study on Development of Domestic Maritime Transportation and Marine Industry (Indonesia) (DS), National Transportation Plan (Poland) (DS)
	Strengthening of Capacity Development Organizations	The Urban Transportation Human Resources Development Project (Brazil) (PTC), National Center for Transportation Studies Project (the Philippines) (PTC), The Panama Nautical School Up-grading Project (Panama) (PTC), Basic Design Study on the Project for the Improvement of Transportation Technical and Professional School No. 1 (Viet Nam) (GA), The Project for Upgrading Human Resources Development for Air Navigation Systems Specialist at the Civil Aviation Training Center in Manila (the Philippines) (PTC), Port Hydraulic Research Center (Turkey) (PTC), Aftercare Technical Cooperation for the Railway Training Center Project (Thailand) (PTC), Renovation of the Road Maintenance and Construction Equipment of IFEER (Morocco) (PTC), The Project on Philippine Coast Guard Human Resource Development (the Philippines) (TCP)
	Strengthening of Evaluation/Monitoring Capability	Road Administration with Focus on Maintenance and Management, and Safety Measures (India) (TCP)
Human Resource Development of the Private Sector	Enhancement of Specialist Education and Training	Technology Development for Electronic Navigational Charts (the Philippines) (PTC), The Project on Philippine Coast Guard Human Resource Development (the Philippines) (PTC), Yazd Signaling Training Center Project (Iran) (PTC), Promotion of the Ship Inspection System and Technique (the Philippines) (PTC), Project of Modernization of Perumka's Education and Training System in JABOTABEK (Indonesia) (PTC), Renovation of the Road Maintenance and Construction Equipment of IFEER (Morocco) (PTC), Project on Improvement of Maritime Education in Turkey (TCP), Study on the Utilization of Private Sector in the Road Maintenance System (Kenya) (DS), Road Administration with Focus on Maintenance and Management, and Safety Measures (India) (TCP)
	Establishment of Prior Examination Systems for Project Tenders	The Establishment of the Public-Private Participation Technique of Metro Manila Urban Expressway Construction (the Philippines) (DS)

The circle, triangle and blank marks in the Examples of Activities for Achieving Sub-targets column indicate the status of JICA's efforts.

- : JICA can demonstrate specific outcomes for implementation of this as an objective of cooperation activities.
- △ : Has been included as one element of JICA cooperation.
- : Unmarked: JICA has achieved very few outcomes in relation to these items.

Please note that these marks are only intended to give a rough indication of JICA's implementation outcomes, and that blank marks do not indicate that items are inadequate for inclusion in cooperation activities. Blank marks simply indicate that, since JICA has not previously implemented such items, such activities may be somewhat challenging if included in new cooperation undertakings.

DS: Development Study
 GA: Grant Aid
 PTC: Project-type Technical Cooperation Project
 TCP: Technical Cooperation Project
 Tr: Training program

Development Objective 2: Toward Internationalization and Regionalization (International Cross-border Transportation)

Development Objective 2:
Toward
Internationalization and
Regionalization

Air transportation has played an important role in responding to internationalization related to people, with airport development given priority. Similarly, maritime transportation has played an important role in responding to internationalization related to goods, with port development given priority and containerization continuously progressing. Carriers in the form of airlines and shipping companies have moved from the public sector to the private sector, and there is also movement towards privatization of airports and port administration. Efforts in response to internationalization and streamlining in response to competition have already progressed positively in the air transportation and maritime transportation sectors.

This Development Objective emphasizes the promotion of economic regionalization through the liberalization of trade, as well as the higher speed and level of efficiency in land-based cross-border transportation which can be expected to increase along with this. The objective is to achieve “the smooth movement of people and goods” between member countries of organizations such as ASEAN in Asia, the Southern African Development Community (SADC), the Economic Community of West African States (ECOWAS), and the East African Community (EAC) in Africa, the Central American Common Market (CACM), the Andean Community (CAN-Comunidad Andina), and MERCOSUR (Mercado Común del Sur (Southern Common Market)). Achieving this will require (i) the facilitation of movement through cross-border and regional transportation infrastructure development, (ii) the standardization of weight restrictions, documentation required for movement and road standards, among others, (iii) the development of cross-border facilities that facilitate smooth movement, and (iv) the enhancement of safety and security measures with a view to the prevention of terrorism.

Mid-term Objective 2-1:
Development of
international transportation
network; Standardization
and modernization of
technologies applied to
international transportation
network; Strengthening of
safety and security
measures

Mid-term Objective 2-1: Facilitation of International Movement of People and Goods

For developing the international infrastructure, in addition to standardizing and unifying bilateral and interregional specifications, standards and documentation, it is essential that a consensus be reached among concerned parties, including donors, regarding these items and if effective use and efficient management and maintenance are to be achieved following development. For example, the Puebla Panama Plan defines various types of conditions for road design standards for international trunk roads, such as those dealing with live loads.

The enhancement of air and maritime transportation security is becoming a more and more prevalent issue today than before. The International Civil Aviation Organization (ICAO) and the International Maritime Organization (IMO) stipulate international standards to facilitate the efficient functioning of international infrastructure. With the objective to prevent terrorism, tendency

was to focus more on security in relation to the movement of people in recent times. However, it is essential to realize therefore, that facilitating the smooth movement of people is not necessarily given the highest priority in all countries.

Sub-target 1: Development of International Transportation Network
(Road/Railway/Airport/Port)

Sub-target 2: Standardization and Modernization of Technologies Applied to International Transportation Network

Sub-target 3: Strengthening of Safety and Security Measures

JICA's Activities

JICA's main activities in relation to Mid-term Objective 2-1 are comprised of airport development projects and port development projects through Development Studies. The latter includes those focusing on containerization. Expert dispatches and training activities are also being undertaken in relation to partial functional improvements of ports such as the modernization of port administration and the modernization of customs systems. The upgrading of international freight transportation via roads and railways is also an important issue, and cooperation is being carried out for infrastructure development where standards and specifications differ among countries.

With regard to the strengthening of safety and security measures, in addition to the use of Grant Aid to provide radars at airports with the aim of preventing accidents, many maritime and aviation training programs have been undertaken. Strategies for dealing with terrorism still remain as an area of cooperation where Japan can demonstrate few practical outcomes.

Mid-term Objective 2-2:
Application of international standards; Facilitation and expedition of import/export processing; Improvement of international border crossing system

Mid-term Objective 2-2: Expedition of Cross-border Processing

There is pressure for the expedition and streamlining of cross-border processing in conjunction with progressing globalization, regionalization and bilateral Free Trade Agreements (FTAs). In order to reduce the various costs and physical and mental burdens, and to remove the various obstructions involved in cross-border processing, it is essential that progress be made in the application of international standards, the alleviation of customs barriers and the standardization of logistics systems. Regarding the movement of people, it should be possible to simplify processes such as passport control and visa issuance at border-crossing facilities. With regard to the movement of goods, increasing international competitiveness by modernizing logistic systems is important.

Sub-target 1: Application of International Standards

Sub-target 2: Facilitation and Expedition of Import/Export Processing

Sub-target 3: Improvement of International Border Crossing System

JICA's Activities

Mid-term Objective 2-2 is an area where JICA can demonstrate few outcomes since it does not stop at bilateral cooperation but is also linked to multilateral cooperation. However, since it is possible that cooperation in

conjunction with regional organizations such as ASEAN, SADC and ECOWAS will become increasingly important in the future, it is essential for JICA to strengthen efforts in this area with a view to coordinating and cooperating with other leading international organizations.

Development Objective 2: Toward Internationalization and Regionalization

Mid-term Objective 2-1: Facilitation of International Movement of People and Goods		
Sub-targets of Mid-term Objective	Examples of Activities for Achieving Sub-targets	JICA's Major Activities
Development of International Transportation Network (Road/Railway/Airport/Port)	Development of International Trunk Road Networks	The Project for Construction of a Bridge over the Mekong River (Cambodia) (GA), Study on the Detailed Design of the Second Mekong International Bridge Construction Project (Laos and Thailand) (DS), Feasibility Study on the Improvement of National Road No. 1 (Phnom Penh–Neak Loeung Section) (Cambodia) (GA), Feasibility Study on the Proposed New Bridge over the Zambezi River at Chirundu Border Post (Zambia and Zimbabwe) (DS), Study on the Integrated Development Plan for the Border Region in Thailand and Lao PDR (Thailand and Laos) (DS)
	Development of International Trunk Railway Networks	Study on the Transportation Master Plan (Bosnia and Herzegovina) (DS)
	Development of International Ports	The Study on the Development Plan of Suez Bay Coastal Area (Egypt) (DS)
	Development of International Airports	Feasibility Study on New Development Plan of Hanoi International Airport (Viet Nam) (DS), Detailed Design Study on Shanghai Pu-dong International Airport (China) (DS), Development of a New International Airport for Tegucigalpa (Honduras) (GA), The Project for Improvement of Terminal Building at Palau International Airport (Palau) (GA)
	Development of Cross-border Transportation Networks and Public Transportation Networks (Bus, Railway, etc.)	Study on the Transportation Master Plan (Bosnia and Herzegovina) (DS)
Standardization and Modernization of Technologies Applied to International Transportation Network	Application of International Technical Standard to the Road Sector	ESCAP, Regulation and Type Approval System for Safety and Environmental Protection of Motor Vehicle (Tr)
	Application of International Technical Standard to the Railway Sector (gauge, voltage, etc.)	The Study on the Standardization for Integrated Railway Network of Metro Manila (the Philippines) (DS)
	Development of Digital Geographic Information	Technology Development for Electronic Navigational Charts (the Philippines) (PTC), Study on Establishing Digital Topographic Maps (Georgia) (DS)
	Standardization of Transportation Signage	Regulation and Type Approval System for Safety and Environmental Protection of Motor Vehicle (Tr)
	Technical Standardization of Land Transportation	
Participation in International Technical Exchange	Third Country Training Course, Road Administration with Focus on Maintenance and Management, and Safety Measures (India) (TCP)	
Strengthening of Safety and Security Measures	Enhancement of Security Management at International Borders	Promotion of the Ship Inspection System and Technique (the Philippines) (PTC), The Project for Improvement of Equipment of the Kabul International Airport (Afghanistan) (GA)
	Enhancement of Maritime Security Management (Enforcement of the ISPS code, Establishment of Maritime Safety Agencies, etc.)	The Project on Philippine Coast Guard Human Resource Development (the Philippines) (PTC), Study for the Maritime Traffic Safety System Development Plan (Indonesia) (DS), Maritime Search and Rescue and Disaster Prevention Course for Policy Planners (Tr), The Project on Philippine Coast Guard Human Resource Development (the Philippines) (TCP)
	Introduction of ICAO Standard in the Air Transportation Sector	The Study of New Communications, Navigation and Surveillance / Air Traffic Management System (the Philippines) (DS), Study on the Transportation Master Plan (Bosnia and Herzegovina) (DS), Seminar on CNS Technology (Tr)
	Introduction of IMO Standard of Water Transportation	International Maritime Conventions and Ship Safety Inspection (Tr)

Sub-targets of Mid-term Objective	Examples of Activities for Achieving Sub-targets	JICA's Major Activities
	Development of Manuals and Training for Emergency	Project on Improvement of Maritime Education (Turkey) (TCP)
	Quality Enhancement of Operation and Management of the Railway Sector and Port Sector	Project on Improvement of Maritime Education (Turkey) (TCP)
	Quality Enhancement of Air Traffic Control	Project for Rehabilitation of the Approach Radar Facility in the Ninoy Aquino International Airport (the Philippines) (GA), The Project for Improvement of Existing Air Traffic Services Equipment System under the Tribhuvan International Airport Modernization Project (Nepal) (GA), The Project for Upgrading Human Resources Development for Air Navigation Systems Specialist at the Civil Aviation Training Center in Manila (the Philippines) (PTC), The Study of New Communications, Navigation and Surveillance / Air Traffic Management System (the Philippines) (DS), Master Plan Study on the Strategic Policy of the Air Transportation Sector (Indonesia) (DS)

Mid-term Objective 2-2: Expedition of Cross-border Processing		
Sub-targets of Mid-term Objective	Examples of Activities for Achieving Sub-targets	JICA's Major Activities
Application of International Standards	Application of International Vehicle Maintenance and Vehicle Certification	Regulation and Type Approval System for Safety and Environmental Protection of Motor Vehicle (Tr)
	Standardization of Geographic Information	Study on Establishing Digital Topographic Maps (Georgia) (DS)
	Application to Open Sky Policy	
	Provision of Quality Management Standards (Quarantine Systems, etc.)	
	Introduction of New Air Navigation Systems	The Study of New Communications, Navigation and Surveillance / Air Traffic Management System (the Philippines) (DS)
Facilitation and Expedition of Import/Export Processing	Introduction of EDI System to Administrative Procedures at Port, and Reduction/Elimination of Intra-regional Tariff	
	Introduction of One-Stop Border Services at International Borders	Feasibility Study on the Proposed New Bridge over the Zambezi River at Chirundu Border Post (Zambia and Zimbabwe) (DS)
Improvement of International Border Crossing System	Development of International Logistic Network over International Border	Study on the Improvement Plan for Transshipment Facilities at Zamyn-Uud Station (Mongolia) (DS)
	Development of Multi-Modal Transportation System	The Study on the Master Plan of Container Cargo Handling Ports, Dry Ports and Connecting Railways (Indonesia) (DS)

The circle, triangle and blank marks in the Examples of Activities for Achieving Sub-targets column indicate the status of JICA's efforts.

- : JICA can demonstrate specific outcomes for implementation of this as an objective of cooperation activities.
- △ : Has been included as one element of JICA cooperation.
- : Unmarked: JICA has achieved very few outcomes in relation to these items.

Please note that these marks are only intended to give a rough indication of JICA's implementation outcomes, and that blank marks do not indicate that items are inadequate for inclusion in cooperation activities. Blank marks simply indicate that, since JICA has not previously implemented such items, such activities may be somewhat challenging if included in new cooperation undertakings.

DS: Development Study
 GA: Grant Aid
 PTC: Project-type Technical Cooperation
 TCP: Technical Cooperation Project
 Tr: Training program

Development Objective 3:
Toward Balanced
Development of a Whole
Country

Development Objective 3: Toward Balanced Development of a Whole Country (National Transportation)

When road, railway, air, and maritime transportation networks are expanded around the entire country, the movement of people and goods from urban to rural, as well as from rural to urban areas, becomes possible. This then forms a foundation for balanced national development.

Although there are differences in national transportation depending on the country, in general, automobiles, trains, airplanes, and ships all compete for their allocation of the transportation of people and goods. The range of distances varies from tens of kilometers to thousands of kilometers. Since the particular characteristics of each transportation mode are quite distinct, national transportation is well suited to intermodal competition. This is why deregulation has progressed much further in this field relative to urban transportation and rural transportation. In the developing countries, on the other hand, several factors have brought about a definite rise in the share of automobile transportation, such as progressing motorization, the improvement of local road networks, the spread of container transportation, and qualitative declines in services and deterioration of railway and maritime transportation. This in turn has led to a remarkable decline in the share of railway and maritime transportation.

Although there are differences across countries depending on factors such as economic conditions and geographic characteristics, maritime and air transportation provide unique transportation services not present in land-based transportation. Although there is competition with land-based transportation, maritime and air transportation has maintained a certain level of market share. Maritime transportation is widely used in island nations such as the Philippines and Indonesia. Since air transportation provides high-speed transportation among airports, as time becomes more and more valuable due to economic growth, a transition from road transportation to air transportation is anticipated.

Mid-term Objective 3-1:
Improvement and
development of trunk road
system; Strengthening of
road maintenance system;
Normalization and
standardization of roads and
road traffic; Improvement of
road transportation services

Mid-term Objective 3-1: Improvement of Road Transportation

Along with being the basic transportation infrastructure for everyday automobile and pedestrian use, roads also perform other various functions.

Examples of these functions include the networking of cities and regions, access to markets, medical facilities and terminals, the formation of urban areas, and the function of roads as firebreaks and disaster prevention spaces. Roads provide an indispensable foundation for the transportation of people and goods in relation to everyday economic activity. This is why roads account for the overwhelming share of investment in transportation infrastructure in developing countries.

Therefore, the development of systems and implementation frameworks for road management and maintenance, education for the improvement of technical skills and securing sources of funds are important issues, for which major donors have implemented various strategies. The World Bank's Road Management Initiative (RMI), which supports Sub-Saharan countries, is one

Table 2-2 Road Function and Effect

Road Functions		Effects, etc.
Transportation Functions	Transportation Functions	<ul style="list-style-type: none"> • Ensuring the safety of road transportation • Shortening time distances • Alleviating traffic congestion, reducing transportation costs • Reducing road traffic pollution, etc.
	Access Functions	<ul style="list-style-type: none"> • Basic foundations for regional development • Expansion of basic living infrastructure • Promotion of land-use
Spatial Functions		<ul style="list-style-type: none"> • Accommodating public facilities • Forming favorable roadside environments • Enhancing disaster prevention <ul style="list-style-type: none"> • Accommodating lifelines such as electricity, telephone, etc. • Forming anatomy of cities, greening • Functioning as evacuation roads, facilitating fire fighting, etc.

example. This involves efforts towards enhancing management and maintenance in many Sub-Saharan countries in order to facilitate sustained utilization of existing roads. The basic RMI approach involves the establishment of earmarked revenue sources for roads; setting up bodies to perform the development, management and maintenance functions of trunk roads and includes the specialization of government policies. This also has the goal of utilizing a relatively high level of private sector participation in the implementation of road development, management, and maintenance.

In many developing countries, while donor support for new road construction is easy to obtain, securing sources of funding for road management and maintenance is a difficult task. For roads that do not produce income from road users' fees, establishing earmarked revenue sources on the premise of the user principle is important, and the implementation of toll road systems may be worth considering for roads where a certain volume of traffic can be expected.

In general, since large-scale increases in funding sources cannot be expected, it is essential to consider other means of fund procurement, as pointed out in Development Objective 1, such as private sector participation (financial capacity, technological capacity, business capacity) in addition to the efficient use of traditional public funding.

Sub-target 1: Improvement and Development of Trunk Road System

Sub-target 2: Strengthening of Road Maintenance System

Sub-target 3: Normalization and Standardization of Roads and Road Traffic

Sub-target 4: Improvement of Road Transportation Services

JICA's Activities

Japan conducts a significantly large amount of cooperation in relation to

Mid-term Objective 3-1; which, in particular, includes technical cooperation and concessional loans for the improvement and development of infrastructure such as roads, bridges and terminals, and grant aid for road management and maintenance, and construction equipment and materials as well as expert dispatches and training in relation to these activities. However, cooperation mechanisms between political and social issues such as securing sources of road funding, PPPs, and a transition to market economies for transportation services, is extremely limited. One possible reason for this may be the fact that deregulation of road administration progressed slowly in Japan. In any case, in the future, it is essential that emphasis also be given on cooperation relating to social and political issues.

Mid-term Objective 3-2:
Restoration, improvement and development of railway network; Strengthening of railway maintenance system; Normalization and standardization of railway system; Management improvement and privatization

Mid-term Objective 3-2: Improvement of Railway Transportation

Railway transportation features many superior characteristics when compared with other modes of transportation such as efficiency over long distances, high capacity and reliability for commuting to work, superior energy efficiency, low atmospheric pollution, and safety. On the other hand, since railways cannot offer door-to-door services, transportation for both goods and people is shifting towards automobiles, resulting in a significant fall in the usage volume of railway transportation. Furthermore, in countries where railways were developed many years ago, deterioration of this infrastructure is fairly advanced. As a result, many railway businesses have become bankrupt, with the need to improve railway company management as a matter of urgency.

Railways have been operated as monopolies under national jurisdiction in many countries because of their strategic importance. However, as volumes and demand have been declining, rationalization and selective modernization of railway administration are unavoidable. In many countries, privatization through vertical separation and company split-ups/privatization is ongoing.

Sub-target 1: Restoration, Improvement and Development of Railway Network

Sub-target 2: Strengthening of Railway Maintenance System

Sub-target 3: Normalization and Standardization of Railway System

Sub-target 4: Management Improvement and Privatization

JICA's Activities

Recent Japanese technical cooperation has been directed towards the rationalization and privatization of national railways. In addition to proposing cost-reduction strategies for cost centers identified through analyses of the industry, JICA has also provided proposals for related commercial activities in railway terminals and inner-city properties, and proposals directed towards raising railway incomes. Useful references here are the privatization of Japan National Railways, actual examples of the management of JR that followed and examples of management of private railway companies.

Mid-term Objective 3-3:
 Restoration, improvement and development of ports and port facilities;
 Strengthening of port maintenance system;
 Normalization and standardization of port system;
 Improvement of port operation and management;
 Promotion of maritime transportation

Mid-term Objective 3-3: Improvement of Maritime Transportation

The relative advantages of maritime transportation in comparison to other modes of transportation are its ability to move higher volumes of passengers and goods at relatively low costs. Maritime transportation can be broadly divided into bulk transportation and container transportation; with container transportation growing remarkably in recent years. Since the administration of ports was traditionally under the public sector, inefficiency has always been an issue.

Private companies now account for the most portion of maritime transportation. Government administrative bodies must guide business activities in an appropriate direction and they should monitor private companies to ensure that maritime transportation activities are being conducted in accordance with IMO and environmental regulations.

Sub-target 1: Restoration, Improvement and Development of Ports and Port Facilities

Sub-target 2: Strengthening of Port Maintenance System

Sub-target 3: Normalization and Standardization of Port System

Sub-target 4: Improvement of Port Operation and Management

Sub-target 5: Promotion of Maritime Transportation

JICA's Activities

Japan's assistance with regard to Mid-term Objective 3-3 is quite varied, consisting mainly of Master Plans (M/P) and Feasibility Studies (F/S) for port development, the dispatch of experts and training related to port development and port management, and cooperation for the creation of nautical charts. In the future, it is essential for JICA to further enhance approaches towards environmental issues, looking at the relationship between activities and the prevention of marine pollution and preservation of the natural environment.

Mid-term Objective 3-4:
 Improvement/development of airport facilities;
 Improvement/development of aeronautical navigation aid system;
 Strengthening of airport facility maintenance system;
 Normalization and standardization of air transportation system;
 Improvement of airport operation and management

Mid-term Objective 3-4: Improvement of Air Transportation

Air transportation provides faster travel time as compared with railway, road and maritime transportation. Generally, as economic development progresses and when people put more and more value on their time, there is a stronger orientation towards air transportation. Air transportation is not just common for the movement of people, but it is also often chosen by people moving goods from points of production to points of consumption, especially for goods that must be kept fresh (such as raw fish, etc.), and for items of high monetary value (precious metals, jewels, etc.). Air transportation is also an excellent choice during the initial investment and construction phases of new infrastructure development in island nations, and in countries that cover wide areas or where geographic conditions are harsh.

Recently, airport development has been integrated with the privatization of airport management, and common goals in this regard are the rationalization and modernization of management. Over-concentration of activities in the metropolitan airport is common in developing countries, and the development of

regional airports has fallen far behind in comparison to the metropolitan airport.

Deregulation and liberalization of air transportation was comprehensively implemented in America, and this led to liberalization and privatization being thoroughly pursued, with major airlines utilizing “Hub and Spoke” systems, and engaging in strong competition.

Sub-target 1: Improvement/Development of Airport Facilities

Sub-target 2: Improvement/Development of Aeronautical Navigation Aid System

Sub-target 3: Strengthening of Airport Facility Maintenance System

Sub-target 4: Normalization and Standardization of Air Transportation System

Sub-target 5: Improvement of Airport Operation and Management

JICA's Activities

Although there are fewer activities in relation to Mid-term Objective 3-4 than for ports based on the number, the actual performance and outcomes are quite high. These outcomes have mainly been achieved through M/Ps and F/Ss in relation to the development of airports and safety facilities for navigation, and the dispatch of experts and training in relation to airport development and airport management. Future cooperation can be expected to be oriented towards the development of regional airports and the improvement of aviation security.

Mid-term Objective 3-5:
Development and introduction of intermodal transportation system; Facilitation of intermodal connection; Transportation safety measures; Disaster management; Improvement and development of transportation terminals to contribute to regional development

Mid-term Objective 3-5: Strengthening of Intermodal Transportation as well as Improvement of Issues Common to All Modes of Transportation

Examples of measures that are common in multiple modes of transportation include (i) establishing intermodal transportation systems to facilitate connections between different modes of transportation, (ii) implementing traffic safety measures to reduce traffic accidents and (iii) establishing disaster prevention measures to mitigate the damage caused by disasters.

Containerization is a capital-intensive, high tech, innovative technology of transportation that aims for greater economies of scale. Given that developing countries are generally lacking in all the relevant areas, including economic size, transportation demand density, financial capabilities, and maintenance and technological levels, the importance of containerized transportation must be assessed in light of the economic and technological conditions of each country. However, with the increasing regionalization and globalization of economies, efforts to implement containerization, which itself is an international standard of freight transportation, are essential requirements for economic development. The intermodal transportation system is one in which different transportation facilities are used to transportation containerized freight efficiently and quickly from the place of departure to the destination. An important part of this system is the transfer of freight between different modes of transportation, specifically between the maritime and the land transportation at the harbor and between the land transportation and trucks at the inland container depot. This system requires clear and consistent responsibilities for the intermodal transportation of freight.

Accidents involving automobiles are by far the most common type of traffic accidents, and strategies to deal with this are particularly important. Traffic accidents are mainly caused by a combination of factors relating to the road, the vehicle and the driver. In developing countries, there are many potential causes of traffic accidents because (i) road management and maintenance are neglected resulting in poor road conditions, (ii) automobiles are poorly maintained so that accidents are more likely and (iii) many drivers drive vehicles exceeding speed limits or with excessive loads. Therefore, it is important to as much as possible decrease, if not totally eradicate, these factors and to widely execute a traffic safety education program.

Also, with regard to disaster prevention measures, it is crucial to give emphasis to road disasters. Various types of road disasters can occur, including the destruction of roads due to landslides, the flooding of roads by flooding from rivers and the subsidence of roads due to earthquakes. As finances are enhanced through economic development, more funding becomes available for disaster prevention measures, and road disasters tend to decline. Nevertheless, it is crucial that strategies be established as early as possible especially for areas subject to high level of risk from disasters.

Sub-target 1: Development and Introduction of Intermodal Transportation System

Sub-target 2: Facilitation of Intermodal Connection

Sub-target 3: Transportation Safety Measures

Sub-target 4: Disaster Management

Sub-target 5: Improvement and Development of Transportation Terminals to Contribute to Regional Development

JICA's Activities

Cooperation with regard to Mid-term Objective 3-5 has been implemented in relation to individual Sub-targets. With regard to intermodal transportation systems, proposals have been made on the relationship between port, railway and truck terminals, and cooperation has been implemented in the form of short-term expert dispatches and training. Cooperation in relation to transportation safety and disaster prevention measures has been relatively limited, with activities limited to individual requests. Achieving this Mid-term Objective requires not only efforts from the public sector, but also active participation from the private sector as well as from individuals. Holding events such as seminars and training in order to broaden the cooperation base will therefore be important.

Development Objective 3: Toward Balanced Development of a Whole Country (National Transportation)

Mid-term Objective 3-1: Improvement of Road Transportation		
Sub-targets of Mid-term Objective	Examples of Activities for Achieving Sub-targets	JICA's Major Activities
Improvement and Development of Trunk Road System	Development of National Road Networks	Study on the Roads Network Development (Oman) (DS)
	Development of Major Trunk Road Networks (National Roads and Regional Roads)	Feasibility Study on the Improvement of National Road No. 1 (Phnom Penh–Neak Loeung Section) (Cambodia) (GA), Basic Design Study Report on the Project for Construction of the Second Bridge over the Mekong River (Cambodia) (GA), The Feasibility Study on the Construction of Kathmandu–Naubise Alternate Road (Nepal) (DS), Road Network Study in Central and South-East Sulawesi (Indonesia) (DS)
	Development of High Standard Trunk Road (Highway) Networks	Feasibility Study on the Construction of Expressways in the National Capital Region in India (India) (DS)
	Elimination of Missing Links	The Project for Construction of a Bridge over the Mekong River (Cambodia) (GA)
Strengthening of Road Maintenance System	Road Rehabilitation and Road Maintenance	The Study on the Maintenance and Rehabilitation of Highway Bridges (Turkey) (DS), The Study on Arterial Highway Maintenance (Turkey) (DS), Road Administration with Focus on Maintenance and Management, and Safety Measures (India) (TCP), The Project for Procurement of Road Construction Machinery (Bosnia and Herzegovina) (GA)
	Establishment of Road Operation and Maintenance System	Study on the Utilization of Private Sector in the Road Maintenance System (Kenya) (DS), Road Administration with Focus on Maintenance and Management, and Safety Measures (India) (TCP)
Normalization and Standardization of Roads and Road Traffic	Standardization of Road	The Study on the Standardization of Bridge Design (Malaysia) (DS), Feasibility Study on Upgrading Inter-urban Highway System (Sta. Rita–San. Jose Road Section) (the Philippines) (DS), The Feasibility Study on the Construction of Kathmandu–Naubise Alternate Road (Nepal) (DS)
	Standardization of Vehicles	Seminar on Road Administration (Tr), Road Engineering and Administration (Tr), Feasibility Study on Upgrading Inter-urban Highway System (Sta. Rita–San. Jose Road Section) (the Philippines) (DS), The Study on the Standardization of Bridge Design (Malaysia) (DS)
	Preparation of Road Construction Ordinance	
Improvement of Road Transportation Services	Arrangement of Fair Competition Among Transportation Modes, and Provision of Safe Transportation Services	The Study on the Standardization of Bridge Design (Malaysia) (DS), Feasibility Study on Upgrading Inter-urban Highway System (Sta. Rita–San. Jose Road Section) (the Philippines) (DS), The Feasibility Study on the Construction of Kathmandu–Naubise Alternate Road (Nepal) (DS)
	Rationalization and Modernization of Bus Transportation Services and Truck Transportation Services	

Mid-term Objective 3-2: Improvement of Railway Transportation		
Sub-targets of Mid-term Objective	Examples of Activities for Achieving Sub-targets	JICA's Major Activities
Restoration, Improvement and Development of Railway Network	Development of High-speed Railway System	Feasibility Study on Railway Improvement Plan of Transportation Capacity and Train Speed on the Delhi–Kanpur Section (India) (DS)
	Development of Interurban Railway System	The Feasibility Studies on the Rehabilitation and Improvement of Railway in Viet Nam (Viet Nam) (DS), Project for Repairing Railways (Mongolia) (GA)
	Railway Upgrading to Double/Double-double Tracking	The Master Plan Study on the Development of Syrian Railways (Syria) (DS)
	Electrification of Railway System	Study on the Detailed Design Study of Railway Electrification and Double Tracking of Java Main Line Project (Indonesia) (DS)
	Development of Railway Communication System	Study on the Detailed Design Study of Railway Electrification and Double Tracking of Java Main Line Project (Indonesia) (DS), Master Plan Study on Modernization and Rehabilitation of the National Railways (Bolivia) (DS)
	Development/Improvement of Railway Container Terminal	Study on the Railway Yard Improvement (Thailand) (DS)
	Development/Improvement of Passenger Facilities	The Study on the Standardization for Integrated Railway Network of Metro Manila (the Philippines) (DS)
	Modernization of Rolling Stock and Other Equipments	Study on the Detailed Design Study of Railway Electrification and Double Tracking of Java Main Line Project (Indonesia) (DS)

Sub-targets of Mid-term Objective	Examples of Activities for Achieving Sub-targets	JICA's Major Activities
Strengthening of Railway Maintenance System	Strengthening of Maintenance Technique and Capability of Railway Track, Rolling Stock and Railway System	Yazd Signaling Training Center Project (Iran) (PTC), The Feasibility Study on the Construction of Electric Locomotive Repair Workshop (Uzbekistan) (DS), The Feasibility Study on the Rehabilitation Project of the Mongolian Railway (Mongolia) (DS), The Master Plan Study on the Development of Syrian Railways (Syria) (DS)
Normalization and Standardization of Railway System	Standardization of Railway System	The Study on the Standardization for Integrated Railway Network of Metro Manila (the Philippines) (DS)
Management Improvement and Privatization	Improvement of Railway Company Management	Master Plan Study on Long-term Management of Bulgarian Railways (Bulgaria) (DS), Railway Management Planning (Tr), Study on Tariffs and Improved Cost Recovery for Egyptian National Railways: Alternative Study (Egypt) (DS)
	Privatization of National Railway Company	Study on Privatization of Polish State Railways (Poland) (DS), Master Plan Study on Long-term Management of Bulgarian Railways (Bulgaria) (DS)

Mid-term Objective 3-3: Improvement of Maritime Transportation

Sub-targets of Mid-term Objective	Examples of Activities for Achieving Sub-targets	JICA's Major Activities
Restoration, Improvement and Development of Ports and Port Facilities	Development of International Container Terminal	Study on the Rehabilitation Plan and the Container Terminal Operation Plan at the Port of Cristobal (Panama) (DS)
	Development of International Cargo and Passenger Terminal (Bulk, Ro/Ro, etc.)	The Study on the Cebu Integrated Port Development Plan (Preparatory Study) (the Philippines) (DS), The Master Plan Study for the Coastal Channels and Ports Development (Thailand) (DS)
	Development of Domestic Cargo and Passenger Terminal	The Study on Long Term National Port Development Plan (Turkey) (DS)
	Development of Access Transportation Systems for Port Facilities (Roads/Railways)	Study on the Rehabilitation Plan and the Container Terminal Operation Plan at the Port of Cristobal (Panama) (DS), Regional Development Study on the Three States: Espirito Santo, Minas Gerais and Goias (Brazil) (DS), The Study on the Master Plan of Container Cargo Handling Ports, Dry Ports and Connecting Railways (Indonesia) (DS)
Strengthening of Port Maintenance System	Improvement of Maintenance and Repair Technique	The Study for Maintenance and Improvement Plan of Access Channel of Beira Port (Mozambique) (DS)
	Strengthening of Management and Operation System	Study on the Effective Port Management and Operation System (Thailand) (other)
Normalization and Standardization of Port System	Enhancement of Data Computerization (e.g. EDI)	Study on Maritime Traffic Safety System Development Plan: Maritime Telecommunication Facilities; Inventory, Plant Records and Outlook (Indonesia) (DS)
	Ratification of International Security Standard	Master Plan Study on Coastal Shipping Rehabilitation and Development Project (Viet Nam) (DS), Comprehensive Study on Shipbuilding Industry Development (Indonesia) (DS), International Maritime Conventions and Ship Safety Inspection (Tr)
	Ratification of International Safety Standard	Master Plan Study on Coastal Shipping Rehabilitation and Development Project (Viet Nam) (DS), International Maritime Conventions and Ship Safety Inspection (Tr)
Improvement of Port Operation and Management	Enhancement of Efficient Operation (e.g. Privatization)	The Study for Port Development Strategy in the Republic of Indonesia (Indonesia) (DS)
	Improvement of Security Measures	Master Planning and Feasibility Study on the Sihanoukville Port (Cambodia) (DS), Study on Maritime Safety Plans Concerning Search and Rescue (Indonesia) (DS)
	Institutional Setup and Improvement	Study on the Effective Port Management and Operation System (Thailand) (other)

Approaches for Systematic Planning of Development Projects / Transportation

Sub-targets of Mid-term Objective	Examples of Activities for Achieving Sub-targets	JICA's Major Activities	
Promotion of Maritime Transportation	Improvement of Safety	Education Program for Crew	The Study for Port Development Strategy in the Republic of Indonesia (Indonesia) (DS), Study on Maritime Safety Plans Concerning Search and Rescue (Indonesia) (DS)
		Improvement of Ship Management Technique	Master Planning and Feasibility Study on the Sihanoukville Port (Cambodia) (DS)
	Improvement of Services	Policy of Maritime Transportation Promotion and Legal System Setup	The Study for Port Development Strategy in the Republic of Indonesia (Indonesia) (DS), Study on Maritime Safety Plans Concerning Search and Rescue (Indonesia) (DS), Study on Development of Domestic Maritime Transportation and Marine Industry (Indonesia) (DS)
		Development of Maritime Transportation Routes	Study on Pan-Philippine Highway Ferry Service Plan (the Philippines) (DS)
	Improvement of Shipbuilding (incl. Repair Technique)	Improvement of Maritime Company Management	The Study for Port Development Strategy in the Republic of Indonesia (Indonesia) (DS)
		Master Plan Study on Coastal Shipping Rehabilitation and Development Project (Viet Nam) (DS), Comprehensive Study on Shipbuilding Industry Development (Indonesia) (DS)	

Mid-term Objective 3-4: Improvement of Air Transportation			
Sub-targets of Mid-term Objective	Examples of Activities for Achieving Sub-targets	JICA's Major Activities	
Improvement/Development of Airport Facilities	Development of Airport Facilities	Study on the Development of Chittagong Airport (Bangladesh) (DS), Feasibility Study on New Alexandria International Airport Construction Project (Egypt) (DS)	
	Development of Access Transportation Systems to Airport Facilities (Roads/Railways)	Study on the Development of Chittagong Airport (Bangladesh) (DS)	
Improvement/Development of Aeronautical Navigation Aid System	Development of Aeronautical Navigation Aid	Study on Modernization of Tribhuvan International Airport in Kathmandu (Nepal) (DS)	
	Development of Air Traffic Control System	Project for Rehabilitation of the Approach Radar Facility in the Ninoy Aquino International Airport (the Philippines) (GA (facilities + equipment and materials)), The Project for Improvement of Existing Air Traffic Services Equipment System under the Tribhuvan International Airport Modernization Project (Nepal) (GA (equipment and materials))	
	Development of Air Traffic Control Airspace/Flight Route	Study on the Development of the National Air Transportation Network (Nepal) (DS)	
Strengthening of Airport Facility Maintenance System	Improvement of Maintenance and Repair Technique	Seminar on Airport Engineering Policy (Tr)	
	Strengthening of Operation and Management		
Normalization and Standardization of Air Transportation System	Ratification of International Security Standard	Study on the Development of Chittagong Airport (Bangladesh) (DS), Feasibility Study on the Bali International Airport Development (Indonesia) (DS)	
	Ratification of International Safety Standard		
Improvement of Airport Operation and Management	Improvement of Operational Efficiency	The Study on Air Transport Development (Uzbekistan) (DS), Study on the Development of a New CNS/ATM System in the Republic of the Philippines (DS), The Project for Improvement of Equipment of the Kabul International Airport (Afghanistan) (GA (equipment and materials))	
	Improvement of Security Measures		
	Institution Setup and Improvement		

Mid-term Objective 3-5: Strengthening of Intermodal Transportation as well as Improvement of Issues Common to All Modes of Transportation		
Sub-targets of Mid-term Objective	Examples of Activities for Achieving Sub-targets	JICA's Major Activities
Development and Introduction of Intermodal Transportation System	Development of Multimodal Container Transportation Network	The Study on the Master Plan of Container Cargo Handling Ports, Dry Ports and Connecting Railways (Indonesia) (DS), Study on the Integrated Development Project for Ports in the Capital City Region (the Philippines) (DS)
	Enhancement of Logistic Terminal Capabilities	Study on the Effective Port Management and Operation System (Thailand) (DS)
Facilitation of Intermodal Connection	Development of Railway System as Airport Access	Study on New Railway Line Jakarta-Cengkareng Airport (Indonesia) (DS)
Transportation Safety Measures	Development of Transportation Safety Facilities	Study on Road Traffic Safety in Hanoi (Viet Nam) (Overseas Basic Study), Traffic Safety Plan for Roads (Thailand) (DS), Transportation Master Plan and Feasibility Study of Urban Transportation Projects in Greater Cairo Region (Egypt) (DS)
	Transportation Safety Education Program	
Disaster Management	Development of Framework and System of Disaster Prevention	Study on Vulnerability Reduction for Major Roads (Nicaragua) (DS), Slope Disaster Management Study for Federal Highways (Malaysia) (DS), The Study on Road Disaster Prevention Plan (Thailand) (DS)
	Ensuring Traffic Channel for Emergency and Network Redundancy (Alternative Route)	
	Measures for Slope Protection and Rock Fall Protection	Feasibility Study on the Improvement of National Road No. 1 (Phnom Penh–Neak Loeung Section) (Cambodia) (GA)
	Enhancement of Seismic Adequacy of Roads and Bridges	The Study on the Improvement of Existing Bridges along Pasig River and Marikina River (the Philippines) (DS)
Improvement and Development of Transportation Terminals to Contribute to Regional Development	Development of "Michi-no-Eki"	Study on Tourism Development in the Central Areas (Viet Nam) (Preparatory Study) (DS)
	Development of Tourist Route	Study on Community-based Eco-tourism Development (Bosnia and Herzegovina) (DS)

The circle, triangle and blank marks in the Examples of Activities for Achieving Sub-targets column indicate the status of JICA's efforts.

○ : JICA can demonstrate specific outcomes for implementation of this as an objective of cooperation activities.

△ : Has been included as one element of JICA cooperation.

Unmarked: JICA has achieved very few outcomes in relation to these items.

Please note that these marks are only intended to give a rough indication of JICA's implementation outcomes, and that blank marks do not indicate that items are inadequate for inclusion in cooperation activities. Blank marks simply indicate that, since JICA has not previously implemented such items, such activities may be somewhat challenging if included in new cooperation undertakings.

DS: Development Study

GA: Grant Aid

PTC: Project-type Technical Cooperation

TCP: Technical Cooperation Project

Tr: Training program

Development Objective 4:
 Toward Sustainable
 Urban Development and
 Improvement of Urban Life

**Development Objective 4: Toward Sustainable Urban
 Development and Improvement of
 Urban Life (Urban Transportation)**

Economic disparities between the metropolitan area and rural areas are wide in developing countries, and the migration of populations from rural areas to the metropolitan area has continued over a long period. Private sector investment, in the form of FDI for example, tends to be strongly concentrated in the metropolitan area, and this has also been continuously true of economic activity. Restricting the concentration of population and economic activity in the metropolitan area is difficult, and the concentration as well as overcrowding of major cities is a significant development issue faced by many developing countries. Although the severity of urban transportation problems differs depending on the development level in the country or city concerned, severe traffic congestion during peak periods brought on by the rapid increase of motorization, together with the associated economic losses and adverse environmental effects are major issues. It will be essential to expand transportation capacity by improving existing roads and developing new roads in order to rectify these problems. However, since there are limits to how far transportation capacity can be expanded in limited urban areas, promoting the

Box 2-1 The City of London’s Congestion-Charging Scheme

In the City of London, which was facing chronic road traffic congestion problems, on February 17, 2003, a system of charging £8 per day to cars entering the central London area (approximately 21 km²) on weekdays between 7:00 and 18:30 was implemented in an effort to alleviate traffic congestion. A comprehensive network of CCTV cameras (surveillance cameras) and movable digital cameras records the number plates of vehicles entering the area, and this information is cross-referenced with a database at the transportation department to check for vehicles that have not paid the charge, thus regulating the violations.

The London Department for Transportation has reported that following the introduction of the charges, congestion within the area has decreased by 30% on the average; traffic has decreased by 18% and excessive bus waiting times have decreased by 30%. It was further reported that the number of automobiles in the congestion-charging zone has decreased by around 70,000 trips, and that this represents the following transitions:

- (1) 50–60% shifting to public transportation
- (2) 20–30% detouring to avoid the charge area
- (3) 15–25% changing traveling hours

The reaction of city residents before the introduction of the charge system showed that 42% were against its implementation while 38% were in favor. A similar survey after the system’s introduction showed that more people were now in favor of the system’s implementation.

Source: Express Highway Research Foundation of Japan (2005), TMG Bureau of Environment website under “*Rondon no konzatsu kakin seido*” [*London’s Congestion Charge System*]

transition from individual automobile transportation to public transportation is crucial. Therefore, the improvement of public transportation services, and the management of demand for individual automobile transportation are also very important issues.

Management of the demand for individual automobile transportation is an extremely important measure towards promoting a transition to public transportation. Main strategies in this regard include comprehensive parking regulations in inner-city areas and restrictions on vehicle entry into certain designated areas. Although restrictions on vehicle entry have succeeded in Singapore, in general, there are only a few other examples of this strategy being implemented because of difficulty in building a consensus.

Mid-term Objective 4-1:
Traffic capacity increase of arterial roads, intersections and bridges under the jurisdiction of central government; Restoration and improvement of secondary roads and their maintenance system under the jurisdiction of local government; Promotion of private sector participation in urban transportation through PPPs

Mid-term Objective 4-1: Improvement and Development of Urban Transportation Infrastructures

A problem facing urban transportation is heavy traffic. This heavy traffic has developed due to the volume of vehicular traffic which has reached the saturation point in terms of road capacity. It has become necessary to increase road capacity in traffic bottlenecks by, for example, increasing the number of lanes in two lane roads or replacing level crossings with overpasses. However, with the limited urban space available, it is extremely difficult to develop new roads. At the same time, the number of automobiles is rapidly increasing due to larger individual incomes and an expanding used-car market.

In many developing countries, major trunk roads in the metropolitan area have been developed and maintained relatively well under the jurisdiction of the central government. However, secondary roads, feeder roads and other roads under the jurisdiction of local governments are often left without proper maintenance, thus further contributing to the development of traffic congestion. To see improvements in this regard, it is extremely important to strengthen the road administration capabilities and financial resources of local governments and at the same time increase coordination among neighboring local governments.

In urban areas where traffic demand is significant, there is a greater need for the development of bypasses, ring roads and similar traffic infrastructures. There is a high possibility that private sector participation may be introduced by using such roads as toll roads.

Sub-target 1: Traffic Capacity Increase of Arterial Roads, Intersections and Bridges under the Jurisdiction of Central Government

Sub-target 2: Restoration and Improvement of Secondary Roads and their Maintenance System under the Jurisdiction of Local Government

Sub-target 3: Promotion of Private Sector Participation in Urban Transportation through PPPs

JICA's Activities

Ensuring smooth transportation structures within urban areas requires plans based on the city's current and planned future development. Therefore, for cities

that do not have master plans for urban transportation, JICA conducts cooperation for the formulation of M/Ps relating to mid- to long-term urban transportation. JICA also conducts F/S's regarding facilities that have been identified as priorities in M/Ps to verify the relevance of projects and the capacity for management and maintenance. Technical cooperation (development studies, expert dispatches, training, etc.) and Grant Aid or Concessional Loans are carried out for road development, the improvement of intersections, the construction of bridges and the like, within urban areas.

Mid-term Objective 4-2:
Improvement of bus services; Introduction of rail-based public transportation services including MRT and LRT; Management improvement of public transportation service providers

Mid-term Objective 4-2: Improvement and Development of Urban Public Transportation Services

If individual automobile transportation is to be reduced, alternative means of transportation are required and good public transportation services are indispensable. In general, public transportation fares are set at a low level to enable usage by the poor. However, in order to encourage a transition from individual automobile transportation to public transportation, it is necessary to provide high quality services that are punctual, reliable, comfortable, and safe, even if this will lead to raising of fares to some extent. This may involve, for example, the installation of bus lanes to improve the speed and punctuality of buses, the introduction of rail-based public transportation services that are separated from roads such as LRT (Light Rail Transit) and MRT (Mass Rail Transit) and the introduction of high-speed commuting services through the electrification of existing railways. Also, strategies that make public transportation services more attractive are also required to encourage the transition to these services, and this may be done by developing terminals that contain commercial facilities and improving feeder transportation facilities, and by pursuing development that is integrated with surrounding land use.

Sub-target 1: Improvement of Bus Services

Sub-target 2: Introduction of Rail-based Public Transportation Services including MRT and LRT

Sub-target 3: Management Improvement of Public Transportation Service Providers

JICA's Activities

JICA conducts a wide range of cooperation in relation to Mid-term Objective 4-2 including the creation of urban transportation master plans through Development Studies, the dispatch of experts to provide cooperation for the improvement of bus services management and the improvement of existing railway services, F/S's regarding the introduction of rail-based public transportation services such as LRT and MRT as indicated in Development Studies, and overall improvements in public transportation services through training.

Mid-term Objective 4-3:
 Promotion of modal shift from private cars to public transportation services;
 Optimization of urban transportation demand;
 Improvement of urban transportation operation and management

Mid-term Objective 4-3: Transportation Demand Management (TDM)

If restrictions on vehicle entry into inner-city areas are to be implemented, there are many issues to be resolved on the basis of agreement among the various stakeholders. These include setting the target area, vehicle number restrictions, methods of collecting charges, systems of surveillance and monitoring, and administrative entities. Strong leadership from government is important in implementing these types of systems, and it is important to note that commercial activities in central areas may drop if alternative means of transportation are poor, which means that these strategies cannot be implemented in the same way in all large cities.

Sub-target 1: Promotion of Modal Shift from Private Cars to Public Transportation Services

Sub-target 2: Optimization of Urban Transportation Demand

Sub-target 3: Improvement of Urban Transportation Operation and Management

JICA's Activities

JICA's activities in relation to Mid-term Objective 4-3 focus mainly on cooperation for the formulation of urban transportation master plans through development studies. Although there are examples of vehicle restriction zones and parking restrictions proposed as part of M/P studies, practical outcomes of cooperation are extremely limited in this area.

Mid-term Objective 4-4:
 Traffic safety education;
 Enforcement of traffic safety laws and regulations;
 Improvement of traffic safety technology

Mid-term Objective 4-4: Enhancement of Transportation Safety

The metropolitan area is home to large numbers of people and large volumes of concentrated traffic, and the incidence of traffic accidents is extremely high. It is essential to bring about transportation safety by combining various traffic accident prevention strategies such as (i) facilities related strategies for preventing traffic accidents, (ii) strategies aimed at improving driving and the road worthiness of vehicles, (iii) legal system upgrades and the enhancement of surveillance in order to prevent traffic accidents, and (iv) the enhancement of traffic safety education. It is also important to designate certain periods for traffic safety campaigns in order to raise people's awareness in this regard.

Sub-target 1: Traffic Safety Education

Sub-target 2: Enforcement of Traffic Safety Laws and Regulations

Sub-target 3: Improvement of Traffic Safety Technology

Mid-term Objective 4-5:
 Exhaust gas emission control; Improvement of road infrastructure and facilities in view of preventing environmental degradation; Introduction of policy measures to mitigate urban environmental degradation

Mid-term Objective 4-5: Prevention/Improvement of Environmental Deterioration due to Urban Transportation

Environmental strategies are particularly important in large cities since there are higher numbers of private automobiles.

The major environmental impacts of private automobiles are due to noise and air pollutants such as carbon dioxide (CO₂), nitrogen oxides (NO_x) and

suspended particles (SP). The effects are particularly prevalent in areas that run along heavily congested roads. Since older cars with no modifications to make them more environment-friendly are very common in developing countries, fuel consumption volume and exhaust emission volume are high because cars are not regularly maintained. Cooperation aimed at enhancing strategies for preventing environmental deterioration and for improving the environment would be a step in the right direction. This may include the establishment of a vehicle servicing system aimed at conforming with environmental laws that are in place, the enhancement of monitoring systems, the reduction of sources of emissions, and the application of penalties for vehicles that do not conform with legal requirements.

Sub-target 1: Exhaust Gas Emission Control

Sub-target 2: Improvement of Road Infrastructure and Facilities in view of Preventing Environmental Degradation

Sub-target 3: Introduction of Policy Measures to Mitigate Urban Environmental Degradation

Development Objective 4: Toward Sustainable Urban Development and Improvement of Urban Life (Urban Transportation)

Mid-term Objective 4-1: Improvement and Development of Urban Transportation Infrastructure		
Sub-targets of Mid-term Objective	Examples of Activities for Achieving Sub-targets	JICA's Major Activities
Traffic Capacity Increase of Arterial Roads, Intersections and Bridges under the Jurisdiction of Central Government	Development of Trunk Road Network and Bypass	The Master Plan and Feasibility Study to Alleviate Traffic Congestion and Improve Traffic Safety in the Nairobi Metropolitan Area (Kenya) (DS), Feasibility Study on Road Network Improvement for Development of Regional Growth Centers (the Philippines) (DS), Study on Upgrading Inter-Urban Highway System along the Pan-Philippine Highway (Plaridel, Cabanatuan, San Jose Bypass) (the Philippines) (DS), The Feasibility Study on Kuala Lumpur Outer Ring Road Project (Malaysia) (DS), The Transport Master Plan of the Phnom Penh Metropolitan Area (Cambodia) (DS), Feasibility Study on the Project of Highway and Bus Lane of Santa Fe de Bogota (Colombia) (DS)
	Improvement of Intersections	The Study on Improvement of Road Traffic Environment in Chiang Mai (Thailand) (DS), The Master Plan and Feasibility Study to Alleviate Traffic Congestion and Improve Traffic Safety in the Nairobi Metropolitan Area (Kenya) (DS), Study on Road Traffic Safety in Hanoi (Viet Nam) (Overseas Basic Study)
	Development of Hubs/Terminal (Airport, Port, Station, etc.)	The Master Plan and Feasibility Study to Alleviate Traffic Congestion and Improve Traffic Safety in the Nairobi Metropolitan Area (Kenya) (DS), The Study on Urban Transport Master Plan and Feasibility Study in HCM Metropolitan Area (HOUTRANS) (Viet Nam) (DS)
	Enhancement of Access to Airports, Ports, Stations, etc.	Feasibility Study on Railway Improvement Plan in the Klang Valley Area (Malaysia) (DS)
	Development of Logistic Hubs in Urban Area	The Study on Greater Bangkok Truck Terminal (Thailand) (DS)
Restoration and Improvement of Secondary Roads and their Maintenance System under the Jurisdiction of Local Government	Development/Improvement of Local Roads in Urban Area	Study for Public Transportation Improvement in Chengdu City (China) (DS), The Study on Urban Transport Master Plan and Feasibility Study in HCM Metropolitan Area (HOUTRANS) (Viet Nam) (DS), The Transport Master Plan of the Phnom Penh Metropolitan Area (Cambodia) (DS)

Sub-targets of Mid-term Objective	Examples of Activities for Achieving Sub-targets	JICA's Major Activities
Promotion of Private Sector Participation in Urban Transportation through PPPs	Setup of Legal System for PPPs	The Establishment of the Public-Private Participation Technique of Metro Manila Urban Expressway Construction (the Philippines) (DS), Feasibility Study on the Construction of Expressways in the National Capital Region in India (India) (DS)
	Capacity Improvement of Implementation Agency in PPP Introduction/Operation	

Mid-term Objective 4-2: Improvement and Development of Urban Public Transportation Services		
Sub-targets of Mid-term Objective	Examples of Activities for Achieving Sub-targets	JICA's Major Activities
Improvement of Bus Services	Improvement of Bus Services (Bus Network, Punctuality, Fare, etc.)	Study for Public Transportation Improvement in Chengdu City (China) (DS), The Study on Urban Transport Master Plan and Feasibility Study in HCM Metropolitan Area (HOUTRANS) (Viet Nam) (DS)
	Development/Improvement of Bus Related Facilities	The Project for Rehabilitation of the Public Transportation System in Kabul City (Afghanistan) (GA), Rehabilitation of the Public Transportation Capacity in Belgrade City (Serbia and Montenegro) (GA), Basic Design Study Report on the Project for Rehabilitation of Mostar City Transportation System (Bosnia and Herzegovina) (GA), The Project for Improvement of Public Transportation in Ulan Bator (Mongolia) (GA)
	Re-organization and Improvement of Para-transit Transportation	The Transport Master Plan of the Phnom Penh Metropolitan Area (Cambodia) (DS), The Study on Urban Transport Master Plan and Feasibility Study in HCM Metropolitan Area (HOUTRANS) (Viet Nam) (DS), Urban Transportation Improvement in the City of Baku (Azerbaijan) (DS)
	Development of Bus Priority Lane and Exclusive Bus Lane	The Feasibility Study of the Proposed Cavite Busway System (the Philippines) (DS), Feasibility Study on the Project of Highway and Bus Lane of Santa Fe de Bogota (Colombia) (DS), The Study on Urban Transport Master Plan and Feasibility Study in HCM Metropolitan Area (HOUTRANS) (Viet Nam) (DS)
	Enhancement of Feeder Transportation	The Feasibility Study of the Proposed Cavite Busway System (the Philippines) (DS), Feasibility Study on the Project of Highway and Bus Lane of Santa Fe de Bogota (Colombia) (DS), Study on Integrated Transportation Master Plan for JABOTABEK (Indonesia) (DS), Transportation Master Plan and Feasibility Study of Urban Transportation Projects in Greater Cairo Region (Egypt) (DS)
Introduction of Rail-based Public Transportation Services including MRT and LRT	Development of Medium Capacity Transit Systems (Tram, LRT)	The Comprehensive Urban Transport Study of Bucharest City and Its Metropolitan Area (Romania) (DS), The Study on Metro Manila Urban Transportation Integration (the Philippines) (DS), Urban Transportation Improvement in the City of Baku (Azerbaijan) (DS)
	Development of Mass-transit Transportation System	Study on Integrated Transportation Master Plan for JABOTABEK (Indonesia) (DS), The Study on an Improvement Plan for Railway Transport in and around the Bangkok Metropolis in Consideration of Urban Development (Thailand) (DS), Study on Singapore Urban Transportation Improvement (Singapore) (DS)
Management Improvement of Public Transportation Service Providers	Promotion of Operational Efficiency of Public Transportation company	Study on Integrated Transportation Master Plan for JABOTABEK (Indonesia) (DS), Transportation Master Plan and Feasibility Study of Urban Transportation Projects in Greater Cairo Region (Egypt) (DS)

Mid-term Objective 4-3: Transportation Demand Management (TDM)		
Sub-targets of Mid-term Objective	Examples of Activities for Achieving Sub-targets	JICA's Major Activities
Promotion of Modal Shift from Private Cars to Public Transportation Services	Promotion of Public Transportation Use	Study on Integrated Transportation Master Plan for JABOTABEK (Indonesia) (DS), The Study on Urban Transport Master Plan and Feasibility Study in HCM Metropolitan Area (HOUTRANS) (Viet Nam) (DS), The Transport Master Plan of the Phnom Penh Metropolitan Area (Cambodia) (DS), The Study on Improvement of Road Traffic Environment in Chiang Mai (Thailand) (DS), The Comprehensive Urban Transport Study of Bucharest City and Its Metropolitan Area (Romania) (DS)
	Promotion of Bicycle Usage	The Study on Improvement of Road Traffic Environment in Chiang Mai (Thailand) (DS)
Optimization of Urban Transportation Demand	Devisal of Vehicle Usage	
	Alleviation of Vehicular Transportation Demand	Transportation Master Plan and Feasibility Study of Urban Transportation Projects in Greater Cairo Region (Egypt) (DS), Study on Integrated Transportation Master Plan for JABOTABEK (Indonesia) (DS), The Study on Urban Transport Master Plan and Feasibility Study in HCM Metropolitan Area (HOUTRANS) (Viet Nam) (DS)
Improvement of Urban Transportation Operation and Management	Vehicular Traffic Control Improvement	Transportation Master Plan and Feasibility Study of Urban Transportation Projects in Greater Cairo Region (Egypt) (DS), Study on Integrated Transportation Master Plan for JABOTABEK (Indonesia) (DS)
	Vehicle Flow Control by Parking Policies	The Comprehensive Urban Transport Study of Bucharest City and Its Metropolitan Area (Romania) (DS)
	Development/Improvement of Traffic Control Centers	Study on the Development of a Control System for Urban Transportation in Bangkok (Thailand) (DS)
	Improvement of Intersection Traffic Flow Management System and Signal Management	Study on the Development of a Control System for Urban Transportation in Bangkok (Thailand) (DS), The Project for Improvement of Intersections in Kathmandu City (Nepal) (DS)

Mid-term Objective 4-4: Enhancement of Transportation Safety		
Sub-targets of Mid-term Objective	Examples of Activities for Achieving Sub-targets	JICA's Major Activities
Traffic Safety Education	Introduction and Improvement of License System	Regulation and Type Approval System for Safety and Environmental Protection of Motor Vehicle (Tr)
	Introduction of Transportation Safety Education Program	Study on Road Traffic Safety in Hanoi (Viet Nam) (Overseas Basic Study), Study on Integrated Transportation Master Plan for JABOTABEK (Indonesia) (DS), Transportation Master Plan and Feasibility Study of Urban Transportation Projects in Greater Cairo Region (Egypt) (DS)
Enforcement of Traffic Safety Laws and Regulations	Provision of Transportation Safety Agency and Transportation Related Legal System	Traffic Safety Plan for Roads (Thailand) (DS), Study on Road Traffic Safety in Hanoi (Viet Nam) (Overseas Basic Study)
	Capacity Development of Enforcement Agency (Police)	Traffic Police Administration (Tr)
Improvement of Traffic Safety Technology	Setup and Improvement of Safety Standard for Vehicle and Motorcycle	The Master Plan for Lima and Callao Metropolitan Area Urban Transportation (Peru) (DS), Motor Vehicle Inspection and Maintenance System (Tr)
	Improvement of Road Facility and Structure	The Project for Improvement of Intersections in Kathmandu City (Nepal) (GA), The Project for Improvement of Road Network in Luanda (Angola) (GA), The Study on Improvement of Road Traffic Environment in Chiang Mai (Thailand)

Mid-term Objective 4-5: Prevention/Improvement of Environmental Deterioration due to Urban Transportation		
Sub-targets of Mid-term Objective	Examples of Activities for Achieving Sub-targets	JICA's Major Activities
Exhaust Gas Emission Control	Introduction of Vehicular Inspection System	Motor Vehicle Inspection and Maintenance System (Tr)
	Improvement of Catalyst and Fuel	
Improvement of Road Infrastructure and Facilities in view of Preventing Environmental Degradation	Improvement of Road Facilities and Road Structure	Traffic Safety Plan for Roads (Thailand) (DS)
	Environmental Measures for Road Development (Bypass Development, etc.)	Study on Integrated Urban Transportation Strategies for Environmental Improvement in Kuala Lumpur (Malaysia) (DS), Comprehensive Urban Transportation Study in Barranquilla (Colombia) (DS)
Introduction of Policy Measures to Mitigate Urban Environmental Degradation	Enhancement of Gas Emission Control	
	Introduction of TDM	Study on Integrated Transportation Master Plan for JABOTABEK (Indonesia) (DS), The Study on Urban Transport Master Plan and Feasibility Study in HCM Metropolitan Area (HOUTRANS) (Viet Nam) (DS), The Master Plan for Lima and Callao Metropolitan Area Urban Transportation (Peru) (DS), Study on Integrated Urban Transportation Strategies for Environmental Improvement in Kuala Lumpur (Malaysia) (DS), Transportation Master Plan and Feasibility Study of Urban Transportation Projects in Greater Cairo Region (Egypt) (DS)

The circle, triangle and blank marks in the Examples of Activities for Achieving Sub-targets column indicate the status of JICA's efforts.

○ : JICA can demonstrate specific outcomes for implementation of this as an objective of cooperation activities.

△ : Has been included as one element of JICA cooperation.

Unmarked: JICA has achieved very few outcomes in relation to these items.

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DS: Development Study

GA: Grant Aid

PTC: Project-type Technical Cooperation

TCP: Technical Cooperation Project

Tr: Training program

Development Objective 5:
Toward Sustainable Rural
Development and
Improvement of Rural Life

Development Objective 5: Toward Sustainable Rural Development and Improvement of Rural Life (Rural Transportation)

Economic disparities between major cities and rural areas are wide in developing countries, and the movement of populations from rural areas to major cities has been occurring continuously for a long time. The flow of the labor force out of rural areas is slowing rural activity, thereby further expanding disparities between these areas and large cities.

It is important for people in rural areas to be contented with their life even without moving to the cities. Thus, from the perspective of civil minimum, it is important that transportation arrangements within the rural areas, and between rural and other areas, are adequate.

Ensuring sufficient transportation arrangements between rural and other areas is related to Development Objective 3: Toward Balanced Development of a Whole Country (National Transportation). In particular, the improvement of road transportation and vessel-based (domestic shipping, airlines) transportation is important. It would be desirable to completely upgrade transportation conditions within regions. However, for areas that are experiencing financial constraints, it is important to consider the necessity, urgency and relevance of transportation infrastructure development, and to implement feasible measures according to needs.

Problems relating to rural transportation include (i) sparse population densities and underdeveloped roads, (ii) inadequate management and maintenance of existing road infrastructure due to insufficient sources of funds and (iii) low mobility faced by residents of remote rural areas.

Mid-term Objective 5-1:
Provision of basic
transportation infrastructure
and services to secure civil
minimum; Enhancement of
transportation safety and
reliability

Mid-term Objective 5-1: Improvement of Rural Transportation Infrastructure

Although it is difficult to find the relevance for rural infrastructure development from the point of view of profitability and efficiency, the development of feeder roads that connect residences, farm villages, schools, medical facilities, markets, and the like, which are located some distance from trunk roads is extremely important for improving people’s lives, and also with regard to the contemporary issue of poverty reduction.

In areas where the rainy season brings concentrated rainfall, since there are many roads that do not provide adequate passage due to the destruction of road surfaces, the restoration of road surfaces following the rainy season is crucial. Ensuring the civil minimum is desirable, and this may be achieved by upgrading to all-weather roads, or through regular maintenance.

There are some points of caution here. Road developments that go beyond rural management and maintenance capacities should be avoided, and it is desirable to utilize appropriate technology that will allow sustained management and development with local resources.

Sub-target 1: Provision of Basic Transportation Infrastructure and Services to Secure Civil Minimum

Sub-target 2: Enhancement of Transportation Safety and Reliability

JICA's Activities

Japan can demonstrate many successful outcomes in relation to Mid-term Objective 5-1, including the construction of roads and bridges through Grant Aid, and road restorations through grassroots grant aid. Since small-scale bridges constructed through Japanese cooperation are not washed away during rainy seasons ensuring access all year round, they are highly valued by residents from all areas concerned.

Mid-term Objective 5-2:
Maintenance and improvement of public transportation services with a view to satisfying civil minimum; Provision of transportation services for better living standard; Improvement of safety and reliability of public transportation services

Mid-term Objective 5-2: Improvement of Rural Public Transportation Services

There are various development issues that are unique to rural areas such as low population densities, a lack of industrial diversity, vulnerability to external environmental changes, and the difficulty of introducing market principles. Therefore, transportation services in rural areas are commonly limited to low standards.

Transportation services in rural areas such as buses and taxis are prone to be of low quality or may not be provided at all because of profitability and efficiency considerations. Where these types of situations occur, vehicles such as bike taxis, cyclos and pickup trucks are operated illegally. Although they readily provide a means of transportation for people, problems exist in relation to safety and other issues.

In rural areas, feeder transportation services that require small amounts of initial capital, such as bike taxis and pickup trucks, lend themselves to being provided at the individual level. Entry into the market for feeder transportation services is relatively easy, and this plays a significant role in terms of securing employment in developing countries. However, although these services are cheap, there are problems in terms of ensuring quality, safety and reliability, and it may be necessary for governments to provide operation, management and improvement.

Sub-target 1: Maintenance and Improvement of Public Transportation Services with a view to Satisfying Civil Minimum

Sub-target 2: Provision of Transportation Services for Better Living Standard

Sub-target 3: Improvement of Safety and Reliability of Public Transportation Services

JICA's Activities

Although JICA conducts activities in relation to Mid-term Objective 5-2 as part of integrated regional development plans created through Development Studies, there is still very little cooperation in this area. With regard to Japan's activities, there is an example of improvements to bus management being required in relation to the provision of buses in a rural city. However, this is an isolated example.

Mid-term Objective 5-3:
Improvement of funding mechanisms for rural transportation; Supporting private sector and technicians to study technologies suitable for locality; Establishment of road development and maintenance system based on participation of local people

Mid-term Objective 5-3: Enhancement of Sustainability of Rural Transportation Systems

Since transportation infrastructure development, management and maintenance involve high costs, securing the necessary financing is not an easy task. Since these problems are even more difficult in areas of low population density and transportation demand, finance from external areas is required. It is important to secure a certain level of funding sources through, for example, the establishment of legal and budgeting systems for procuring financial resources. Strategies may include clarifying the allocation of national and rural roles and introducing subsidies.

In order to promote self-sustaining development of rural infrastructure, it is important to accurately understand the needs, achieve cost reductions and efficient management and maintenance, and foster ownership. Involving residents from the planning stages and ensuring that their opinions are reflected in projects is an effective approach. Since it may also be leaving responsibilities and burdens on them, careful examination of the issues is required. Examples of the “Food for Work” approach being used at the construction stage are becoming more prevalent.

In general, rural industry is dominated by agriculture and there are limited opportunities for cash income. Therefore, using infrastructure development to provide employment opportunities is crucial. To facilitate this, it is essential to provide occupational training so that rural residents can be involved in infrastructure development, management and maintenance. It is also necessary to provide training for personnel involved in the provision of transportation services on a continuous basis in order to ensure that transportation services are highly reliable and safe.

Sub-target 1: Improvement of Funding Mechanisms for Rural Transportation

Sub-target 2: Supporting Private Sector and Technicians to Study Technologies Suitable for Locality

Sub-target 3: Establishment of Road Development and Maintenance System based on Participation of Local People

JICA's Activities

Ensuring self-sustaining development is crucial to the success or failure of projects. Therefore, in relation to Development Study proposals and Basic Design Studies for Grant Aid, various suggestions aimed at securing sustainability and self-dependence are put forward in addition to the verification of project work plans, feasibility and relevance.

In relation to the road and bridge development projects that are being carried out over several years in the Philippines, construction and monitoring of construction for relatively long bridges in excess of 100m are carried out by Japanese personnel. For short bridges of around 50m, however, only the materials and equipment (superstructure, etc.) required for construction are provided from Japan. Local companies carry out construction, receiving

cooperation and advice from Japanese construction companies and construction monitoring companies. Having these companies build the bridges themselves not only allows appropriate technology to be utilized, but also contributes to their development, making these projects quite successful.

Development Objective 5: Toward Sustainable Rural Development and Improvement of Rural Life

Mid-term Objective 5-1: Improvement of Rural Transportation Infrastructure		
Sub-targets of Mid-term Objective	Examples of Activities for Achieving Sub-targets	JICA's Major Activities
Provision of Basic Transportation Infrastructure and Services to Secure Civil Minimum	Development of Feeder Roads and Small Bridges with Appropriate Technique	The Project for Construction of Bridges along Rural Roads in Northern Luzon (the Philippines) (GA), The Project for Improvement of Portable Street Bridges for Feeder Roads (Bangladesh) (GA), The Project for Reconstruction of Bridges in the Northern District (Viet Nam) (GA), Feasibility Study on Road Network Improvement for Development of Regional Growth Centers (the Philippines) (DS)
	Development of Local Ports	Study on the Comprehensive Ports Development Plan (Panama) (DS)
	Development of Local Airports	The Study on Selected Airports Master Planning Project (the Philippines) (DS), The Study on Airport Development Master Plan in the Kingdom of Thailand (Thailand) (DS)
Enhancement of Transportation Safety and Reliability	Implementation of Regular Checks/Maintenance	The Study on Rural Roads Improvement in Western Kenya (Kenya) (DS), Study on the Utilization of Private Sector in the Road Maintenance System (Kenya) (DS)
	Implementation of Transportation Safety Measures	Master Plan Study on the Comprehensive Urban Transportation System in the Metropolitan Area (Guatemala) (DS), Feasibility Study on the Bogor-Bandung Road Project (Indonesia) (DS)
	Post-disaster Recovery	The Project for the Urgent Rehabilitation of Sindhuli Road (Section IV) (Nepal) (GA)

Mid-term Objective 5-2: Improvement of Rural Public Transportation Services		
Sub-targets of Mid-term Objective	Examples of Activities for Achieving Sub-targets	JICA's Major Activities
Maintenance and Improvement of Public Transportation Services with a view to Satisfying Civil Minimum	Implementation of Transportation Safety Measures	Master Plan Study on the Comprehensive Urban Transportation System in the Metropolitan Area (Guatemala) (DS), Feasibility Study on the Bogor-Bandung Road Project (Indonesia) (DS)
	Development of Minimum Transportation Measures	The Development Study on Comprehensive Regional Development Plan for the Western Part of Kalimantan (Indonesia) (DS), Study on Pan-Philippine Highway Ferry Service Plan (the Philippines) (DS)
Provision of Transportation Services for Better Living Standard	Provision of Equipment (Bus, Ferry and other Transportation Equipment)	The Project for Construction of the Inter-islands Navigation Vessel (Samoa) (GA), The Project for Rehabilitation of the Public Transportation System in Kabul City (Afghanistan) (GA)
	Reorganization/Rearrangement of Informal Transportation Modes	The Study on the Standardization for Integrated Railway Network of Metro Manila (the Philippines) (DS), The Feasibility Study of the Proposed Cavite Busway System (the Philippines) (DS)
	Logistics Improvements in Rural Area	The Development Study on Comprehensive Regional Development Plan for the Western Part of Kalimantan (Indonesia) (DS), Regional Development Study on the Three States: Espirito Santo, Minas Gerais and Goias (Brazil) (DS), Study on Pan-Philippine Highway Ferry Service Plan (the Philippines) (DS)
Improvement of Safety and Reliability of Public Transportation Services	Introduction of Inspection System	The Master Plan Study on the Development of Syrian Railways (Syria) (DS), Study on Railcar Factories Modernization Project (India) (DS)

Mid-term Objective 5-3: Enhancement of Sustainability of Rural Transportation Systems		
Sub-targets of Mid-term Objective	Examples of Activities for Achieving Sub-targets	JICA's Major Activities
Improvement of Funding Mechanisms for Rural Transportation	Establishment of Legal System and Budgetary System	The Establishment of the Public-Private Participation Technique of Metro Manila Urban Expressway Construction (the Philippines) (DS), Feasibility Study on the Construction of Expressways in the National Capital Region in India (India) (DS)
	Creation of Road Specific Funds	
	Introduction of Subsidy	
	Introduction of Benefit Principle	
Supporting Private Sector and Technicians to Study Technologies Suitable for Locality	Capacity Development of Local Contractors	The Project for Improvement of Equipment for Rural Road Construction (Guatemala) (GA), The Project for Improvement of Equipment for Rural Roads (Morocco) (GA), Periodic Maintenance of Capacity Building for Regional Office (East Timor) (TCP)
	Development of Necessary Technical Manuals	
Establishment of Road Development and Maintenance System based on Participation of Local People	Utilization of Community, NGOs, etc.	The Study on Rural Roads Improvement in Western Kenya (Kenya) (DS)
	Establishment/Diffusion of Labor-based Technology (LBT)	Capacity Strengthening on Labor-based Technology (Tanzania) (TCP)

The circle, triangle and blank marks in the Examples of Activities for Achieving Sub-targets column indicate the status of JICA's efforts.

- : JICA can demonstrate specific outcomes for implementation of this as an objective of cooperation activities.
- △ : Has been included as one element of JICA cooperation.

Unmarked: JICA has achieved very few outcomes in relation to these items.

Please note that these marks are only intended to give a rough indication of JICA's implementation outcomes, and that blank marks do not indicate that items are inadequate for inclusion in cooperation activities. Blank marks simply indicate that, since JICA has not previously implemented such items, such activities may be somewhat challenging if included in new cooperation undertakings.

- DS: Development Study
- GA: Grant Aid
- PTC: Project-type Technical Cooperation
- TCP: Technical Cooperation Project
- Tr: Training program