

**Future Assistance for the Infrastructure
Sector of the Mekong Region
(Recommendations)**

November 2004

Infrastructure Development Institute - Japan

Future Assistance for the Infrastructure Sector of the Mekong Region (Recommendations)

Contents

Introduction (Compiling Recommendations)	1
1. Present Status and Problems of Development in the Mekong Region	4
1.1 Outline of Politics, Society, and Economics	4
1.2 Economic Conditions and Problems	4
1.3 Living and Social Conditions and Problems	6
1.4 Economy and Social Bases	7
2. Overview of Development Strategy	10
2.1 Outline of Past Assistance from Japan to the Mekong Region	10
2.2 Trend of Assistance to the Mekong Region from Donors and NGOs	12
3. Future Assistance to the Mekong Region in the Infrastructure Sector	15
3.1 Direction of Development and Tasks of Infrastructure	15
3.2 Details of Future Assistance in the Infrastructure Sector	19
3.3 Ways to Advance Assistance	36

Future Assistance for the Infrastructure Sector of the Mekong Region (Recommendations)

Introduction (Compiling Recommendations)

(1) Background

- With the arrival of a new age when international interdependence is expanding and a new form of international exchange is evolving, it is becoming increasingly important to strengthen collaboration among countries in the region under a common regional development vision, and to systematically develop an international infrastructure with its location and effects stretching over multiple countries, in addition to infrastructure development within each country.
- In the “Japan-ASEAN Action Plan” established in December 2003^{*1}, Japan announced its intention to emphasize development of the Mekong region in the form of economic cooperation and policy planning.
- Japan has promoted economic cooperation with the Mekong region in accordance with the “Greater Mekong Subregion (GMS) Program” proposed by the Asian Development Bank (ADB). However, with the establishment of “Japan-ASEAN Action Plan”, Japan is being challenged to define a new policy for developing the Mekong region.
- In the light of the fact that infrastructure is the basis of people’s lives, and can contribute to the continued improvement of their lives through the economic growth of a given country or region, development of adequate infrastructure is a very important task in the Mekong region.

(2) Purpose

- The purpose of these recommendations is to envisage the future state of the Mekong region and to delineate an assistance policy for this region in the infrastructure sector (including institutional building and human resources development), based on the “New Concept of the Mekong Region Development” presented in the “Japan-ASEAN Action Plan” (December, 2003).

(3) Preconditions

- From a mid- to long-term viewpoint (approximately 5 - 10 years), the direction of the Mekong region’s development and the expected state of the infrastructure that supports it as a development base will be defined. Concurrently, priority projects that should be given assistance preferentially selected and classified into a short-term project group (approximately 3 years) or a mid- to long-term project group.

^{*1} This action plan contains more than 100 substantial measures to be implemented in the near future, and was formulated on the basis of the “Tokyo Declaration for the Dynamic and Enduring Japan-ASEAN Partnership in the New Century,” which will become the guidelines for the cooperative relationship between Japan and ASEAN countries in the future.

- The expected development of infrastructure will be studied for the Greater Mekong Subregion (hereafter referred to as the GMS), which includes Cambodia, Laos, Myanmar, Thailand, Vietnam, and Yunnan Province of China. Projects to be implemented only in China will not be included among the projects targeted in this report.
- The recommendations in this report are based on a broad analysis of the present state and future issues associated with infrastructure, which includes electricity, energy, and other diverse sectors, but discussions on actual projects and assistance are limited to the land, infrastructure, and transport sectors.

(4) Working Group

- These recommendations were compiled by the Infrastructure Development Institute – Japan, having been commissioned by the Ministry of Land, Infrastructure and Transport of the Japanese Government. The “Mekong Region Development Committee” was set up to engage in intensive investigations and discussions, which contributed greatly to the compilation of this document.

Members of the Mekong Region Development Committee

Chairman: Dr. MORICHI Shigeru

Professor, National Graduate Institute for Policy Studies

Members : Mrs. UMEZAKI Michiko

Group Director, Group II, Regional Department I (Southeast Asia), Japan International Cooperation Agency

Dr. KIMURA Fukunari

Professor, Faculty of Economics, Keio University

Dr. OMACHI Toshikatsu

Managing Director, Infrastructure Development Institute (IDI)-Japan

Mr. TATARA Toru

Special Adviser to the Dean, Asian Development Bank Institute

Mr. TOMIOKA Seiichiro

Leader of Construction Member Meeting, Infrastructure Development Institute (IDI)-Japan

Mr. NAKAZAWA Keiichiro

Director, Division 2 (Vietnam, Cambodia & Laos), Development Assistance Department II, Japan Bank for International Cooperation

Dr. NAKAYAMA Mikiyasu

Professor, Course of International Studies, Graduate School of Frontier Sciences, the University of Tokyo

Mr. HATAO Shigemichi

Managing Director, Infrastructure Development Institute (IDI)-Japan

Mr. MATOBA Yasunobu

Executive Director, Agricultural Development Consultants Association (ADCA), Japan

Mr. YAMAKAWA Asao

Executive Director, Japan Association of Steel Bridge Construction

Dr. YOSHIDA Tsuneaki

Professor, Course of International Studies, Graduate School of Frontier Sciences, the University of Tokyo

Mr. FUJIMORI Yoshihiro

Director, International Policy Unit for Infrastructure, Ministry of Land, Infrastructure and Transport

Mr. SUZUKI Atsushi

Director for International Engineering, International Division for Infrastructure, Policy Bureau, Ministry of Land, Infrastructure and Transport

Mr. KUNITOMO Masaru

Deputy Director, River Planning Division, River Bureau, Ministry of Land, Infrastructure and Transport

Mr. DOI Hirotsugu

Senior Deputy Director, Planning Division, Road Bureau, Ministry of Land, Infrastructure and Transport

Meetings of the Mekong Region Development Committee

The 1st meeting June 14, 2004

The 2nd meeting July 29, 2004

The 3rd meeting October 25, 2004

1. Present Status and Problems of Development in the Mekong Region

1.1 Outline of Politics, Society, and Economics

- The Mekong River is one of the most prominent rivers in the world and its river basin extends over six countries.
- In 2002, the economic growth rate of the entire region was as high as 6.2%, and the rate has continued to rise in recent years.
- Cambodia, Laos, Myanmar, and Vietnam (hereafter referred to as CLMV) are currently in the process moving towards a market economy, with diversification of industrial structure and liberalization of trade and investment evolving. Also, economic relationships with China and India are expanding.
- Indexes show that achievement of Millennium Development Goals, which were set by the United Nations, is generally improving. But, many of the countries in the Mekong region are still far from achieving targets related to basic living standards, such as “halving the proportion of people suffering from poverty and hunger” and “reducing under-five mortality by two-thirds.”

1.2 Economic Conditions and Problems

(1) Economic growth

- In 2002, the economic growth rate in the entire Mekong region was as high as 6.2%, and this rate continues to rise. Therefore, it can be said that the Mekong region as a whole is a region where a high economic growth can also be expected in the future.
- There is concern about a growing economic gap among the three country groups: [1] Thailand which has already reached a high economic standard; [2] Vietnam and Yunnan Province in China, which are continuing relatively steady economic growth; and, [3] Laos, Cambodia, and Myanmar, whose economic growth rates are comparatively low.
- The gaps in Growth Domestic Product (GDP) per capita among the countries is tending to decrease. For example, the GNP per citizen of Thailand (the highest among the GMS countries) in 1992 was 5.3 times higher than that of Myanmar (the lowest among the GMS countries), but the rate decreased to 4.3 times in 2002. Nevertheless, a large gap still exists.
- Within each country, an economic gap is generally widening between urban and rural areas.

(2) Economic gap

- Economic gaps exist within each country. For example, the proportion of poor people is higher in the following areas: northwestern and central Vietnam; northern and southern Laos; northern Cambodia; and northern and northeastern Thailand.
- A large economic gap is also found between urban and rural areas

(3) Industrial structure

- Outside Thailand, the percentage of the population engaged in agriculture is still high. But, the industrial structure has been diversifying in recent years with the growth of manufacturing and service industries.
- The CLMV countries are facing the common challenge of moving towards a market economy. Growth of the private sector is expected in these countries.

(4) Investment and trade

- Trade and investment within the Mekong region have been increasing significantly due to rapid liberalization of trade and investment through the conclusion of a Free Trade Agreement (FTA) and participation in the ASEAN Free Trade Area (AFTA) and World Trade Organization (WTO). Stage 2 of the Cross Border Transportation Agreement within the GMS will be concluded this year. Given these factors, it is expected that trade and investment within the region will increase further.
- Concerning trade within the Mekong region, trade between Thailand and China has been large. But, in recent years, trade between Vietnam and Thailand/China has also been increasing significantly. As a whole, trade within the Mekong region is growing enormously. However, the volume of trade of Cambodia, Laos, and Myanmar is still small. In general, the amount of trade of each country is showing a tendency similar to that of economic growth in those countries.
- Due to the economic growth and participation in the WTO of China, and conclusion of the ASEAN-China free trade agreement, countries in the Mekong region now have direct access to the growing market in China. Trade with India and investment are also expected to expand.
- Concerning investment from foreign countries, Japan is investing heavily in Thailand and Vietnam.
- With the expansion of physical distribution in the Mekong region, the need to speed up customs procedures, introduce one-stop clearance, etc. are growing.

(5) External debt and external assistance

- The external debt of Vietnam is not a serious concern. But, Cambodia and Laos have problems in that the balance of debt is relatively large compared to their revenues. Hence, it is necessary to provide assistance, while paying attention to the macroeconomic conditions of those countries.
- Assistance from Thailand to the surrounding countries through the ACMECS (Ayeyawady - Chao Phraya - Mekong Economic Cooperation Strategy), and Development Triangle Initiatives ^{*2} adopted by Cambodia, Laos, and Vietnam, are underway in this region.

^{*2} A support program for the poorest seven provinces located on the borders of three countries (Cambodia, Laos, and Vietnam) with Vietnam is taking a leading role.

(6) Tourism

- The number of tourists traveling to the Mekong region is increasing. The country accepting by far the largest number of tourists is Thailand. Tourists traveling to Vietnam have also been increasing recently.
- Cambodia and Laos have many underdeveloped tourist resources. A new regional cooperation efforts have been initiated to promote tourism, such as the Emerald Triangle Initiative (ETI) ^{*3} adopted by Thailand, Cambodia, and Laos.

1.3 Living and Social Conditions and Problems

(1) Population

- The total population of the Mekong region as of 2002 was approximately 260 million. The population has been increasing slowly and is expected to increase at an annual rate of 2.6% - 1.0% in the future. It is also expected that the population movement into urban areas will increase in all countries.
- As for the structure of population, the younger demographics account for a large percentage, and the labor force is expected to grow.
- Approximately 75 million people of minority ethnic groups live mainly in mountainous areas.

(2) Poverty

- Poverty has been improved gradually, but approximately 5.5 million people still live below the poverty line.
- The percentage of undernourished pupils and people suffering from hunger is decreasing, but approximately one third of children below the age of five years are still in a state of poor nourishment.

(3) Education

- The percentage of children receiving primary education is improving gradually. The literacy rate is high as a whole, except in Laos and Cambodia.
- The gender gap in education is improving gradually, but a gap of more than 20% exists in Laos and Cambodia.

(4) Public health

- The infant mortality rate is improving gradually, but the level is still high in Laos and Cambodia.

³ In April 2003, an international wide-area tourism development project called the “Emerald Triangle” was started by Thailand, Cambodia, and Laos.

- The average life expectancy is over 70 years in Thailand and Yunnan Province of China, and approaches 70 years in Vietnam.
 - The maternal mortality rate is improving gradually, but the level is still high in Laos and Cambodia.
- (5) HIV/AIDS**
- The HIV/AIDS problem is most serious in Cambodia.
- (6) Water supply and sewerage**
- Access to safe water is gradually improving as a whole.
 - The percentages of people without access to sanitation facilities are high in Laos, Yunnan Province of China, and Cambodia.
- (7) Natural disasters**
- Inundation and sediment-related disasters occur every year due to flooding of the main course and tributaries of the Mekong River. The scale of damage is large and there are numerous disaster hazard areas. Damage is expanding due to the increased development and expansion of urban areas in recent years.
- (8) Environment**
- The forested area is decreasing in every country in the Mekong region, except in Vietnam.
 - Environmental problems are occurring in urban areas due to the convergence of population and increased development in urban areas.

1.4 Economy and Social Bases

(1) Highways/Roads

- Typified by the Asian Highway (AH) project, development of arterial highways, as cross-border traffic routes, has been underway in the Mekong region to improve transport in the region. They are also core road networks within each country.
- Traffic bottlenecks are seen at localized areas, such as tunnels, bridges, unpaved sections, and sections with a narrow road width.
- Problems related to the functional reliability of the transport infrastructure exist, such as the closing of roads in the rainy season due to aging infrastructure and low paving rate.
- One problem common to all countries is a shortage of finance, human resources, and technologies for the adequate maintenance of roads.
- Also, the functional improvement of local road networks is an important issue to be addressed. It is important to have a substantial effect on road networks by repairing and improving existing roads, in addition to constructing new roads.

- In the metropolitan areas of each country, increases of in the numbers of vehicles (especially, two-wheel motorcycles), due to increasing population and increasing standard of living, is noticeable. A major problem in metropolitan areas is traffic congestion and that in the local areas is traffic accidents.

(2) Railways

- Every country excluding Laos has a railway network.
- Only parts of sections in metropolitan areas are electrified. The transportation capacity of railways in each country is generally low, mainly because most railway lines are single-tracked, and because many sections that were destroyed by war have not been restored completely. The width of most tracks is a meter gauge, but other gauges also exist.
- To improve railway networks and vitalize regional trade, existing networks need to be repaired and improved, and service standards refined, in addition to construction of new railway networks.
- The “Trans-Asia Railway” project is a cross-border international railway network development project in the region.
- As for Laos, which is the only country in the region without a railway network, an international railway network scheme linking Nong Khai and Vientiane is now underway. It will operate on the Thailand-Laos Friendship Bridge completed over the Mekong River in 1994.

(3) Water transport

- There are a number of river ports in each country in the Mekong region, making use of the Mekong River, the downstream section of the Hong River, and the main courses and the tributaries of the Tonle Sap River. However, problems exist related to these rivers, such as water depth fluctuating 5 - 10 m in some sections in the rainy and dry seasons, and restrictions being placed on the sizes of vessels that can enter these water systems, especially during the dry season.
- Inefficient operation of ports, with long stay times of cargo ships after reaching berth, is a major problem in every country, which is attributable to the deterioration of port facilities and insufficient cargo-handling facilities. Customs procedures also pose a problem, such as long retention times of transit cargos for inspection.
- Water transport on the Mekong river is divided at the Khong Falls on the border of Laos and Cambodia because of a large head of water. This poses a constraint in that cargos from the upstream area of the Mekong River must be carried to ports in Vietnam or Thailand by land.

(4) Airport

- Every country in the Mekong region has an international airport.

- The characteristic of international air transport in every country in this region is that a large share is held by the transport of tourists and the share of cargo transport is small.
- Except for some international airports *⁴, the level of facility development is low, with many problems to be solved before achieving safe and mass air transportation.
- Concerning air traffic control, various problems are pointed out, such as the difficulty of obtaining a clearance such as for change of a flight altitude during bad weather and communication difficulties due to the low quality of audio-communication systems and other reasons. This is caused by the fact that many flights take the same routes and many flight routes cross one another in Southeast Asia.

(5) Water supply and sewerage

- The level of development of water supply and sewerage systems is low in Vietnam, Laos, and Cambodia.

(6) Electricity and energy

- The Mekong River has a large potential for hydroelectric development. While a large-scale hydroelectric development project is underway in China in the upper reaches of the Mekong River, hydroelectric projects in the four countries in the lower reaches of the river proposed by the former Mekong Commission (MC) have not been advanced for various reasons.
- There are abundant primary energy sources such as coal, water, and natural gas, but their locations within the Mekong region are unbalanced.

(7) Flood control and water resources

- Flooding occurs every year in countries along the Mekong River. For example, in the 2000 Cambodian flood, there was devastating human and economic damage involving most of the national land.

*⁴ Various airport network projects in the Mekong region are in progress, such as rehabilitation of Vientiane International Airport (Laos), construction of No. 2 Bangkok International Airport (Thailand), and construction of New Hanoi International Airport (Vietnam), but development of the air network in the region as a whole is not sufficient.

2. Overview of Development Strategy

2.1 Outline of Past Assistance from Japan to the Mekong Region

(1) Outline of assistance to the Mekong region

- Large-scale assistance from Japan to the Mekong region started in 1991.
- Japan has extended assistance to this region through various frameworks including the proposals of the “Forum for Comprehensive Development of Indochina” (1993) and the “AEM-METI Economic and Industrial Cooperation Committee (AMEICC).”
- In recent years, Japan has been particularly active in providing assistance to projects related to the East-West Corridor in accordance with the GMS framework of Asian Development Bank (ADB). Japan announced (2001) that it would undertake, as pillars for future cooperation, establishment of the East-West Economic Corridor and the development of the Second East-West Corridor (Bangkok-Phnom Penh-Ho Chi Minh Road).
- Among aid and loan-based economic assistance to each country in the Mekong region (excluding Yunnan Province in China) from 1999 to 2003, the amount allocated to the “Mekong Region Development Projects” *⁵ by the Ministry of Foreign Affairs was 115.7 billion yen over three years, and 584.9 billion yen when projects other than the above are included.
- As for economic assistance to the “Mekong Region Development Projects,” the largest amount went to the airport sector, followed by road, harbor, and bridge sectors. In terms of country, the largest amount of assistance went to Thailand followed by Vietnam, Laos, and Cambodia. This is because there were many large-scale projects financed with yen loans in Thailand and Vietnam, whereas projects in Laos and Cambodia were mainly aid-based assistance projects.
- As for the total economic assistance provided to “Mekong Region Development Projects” plus bilateral assistance projects, the largest amount went to the railway sector followed by road, airport, bridge, and harbor sectors. In terms of country, overwhelmingly large amounts went to Thailand and Vietnam compared to other countries.

(2) Outline of assistance to Cambodia

- In 1969, Japan extended a yen loan for the Prek Tnaot multi-purpose dam construction project aimed at providing irrigation and hydroelectricity. After that, assistance was suspended because of civil war in the country. But, in 1991, after conclusion of a peace agreement, assistance was resumed mainly in the form of aid-based assistance and technical cooperation. In the infrastructure sector, restoration of national roads, Route 6 and Route 7, and rehabilitation of Phnom Penh Port were implemented with aid-based assistance from Japan.

⁵ Projects crossing national borders in the basin, projects forming part of a cross-border scheme, and projects whose effects may extend to neighboring countries in the basin.

[Reference] http://www.mofa.go.jp/mofaj/gaiko/oda/seisaku/kuni/sonota/m_kaihatsu/

- In response to the “3rd Consultative Group Meeting for Cambodia” held in Tokyo in 1999, Japan extended a yen loan for an urgent rehabilitation project of Sihanoukville Port at the request of the Cambodian Government. Japan, which has contributed greatly to the realization of peace in Cambodia, considers this to be a priority country for receiving assistance.

(3) Outline of assistance to Laos

- Assistance to Laos from Japan started in the 1950s with feasibility studies on the construction of water supply systems and bridges.
- From the mid-1960s to the mid-1970s, assistance evolved in the form of technical cooperation. Main assistance items involved technical cooperation for the construction of Luang Prabang Hospital, feasibility studies for the construction of Vientiane Airport, and the rehabilitation of the Namgum Dam. A yen loan totaling 5.19 billion yen was extended in fiscal 1974 and in fiscal 1976 for a hydroelectric power project at the Namgum Dam.
- After this, assistance to Laos until recently was extended mainly in the form of aid-based assistance and technical cooperation. Most assistance was provided for infrastructure development in the transportation sector (in particular, road development) and the agricultural sector such as development of irrigation facilities.
- Japan is the largest bilateral donor country of Laos. The amount extended by Japan accounted for approximately 40% of the bilateral assistance Laos received as of 1996. It accounted for 17% in the total assistance Laos received including multi-national assistance.
- The largest development-related objectives of Laos are to improve living standards in rural areas with improved infrastructure, and develop agriculture and rural areas taking poverty eradication as the axis.
- Concurrently, developing human resources is an urgent issue, including training administrative officials aimed at participation in ASEAN Free Trade Area (AFTA) in 2008.

(4) Outline of assistance to Myanmar

- Development assistance extended to Myanmar is the lowest among the GMS countries for political reasons.
- Despite this situation, Japan carried out an economic restructuring support project (development study) from 2001 to 2002. This project, conducted in the form of a joint survey, was intended to investigate the characteristics and the problems of the Myanmar economy, and to find appropriate fields of assistance to support its economic improvement. Other aid-based assistance plans include an infrastructure development plan for the water supply in Shan Province, a plan to provide construction machinery for road construction in the same province, and a plan to improve medical equipment at the Yangon General Hospital.

(5) Outline of assistance to Thailand

- Assistance from Japan to Thailand started in 1968 in the form of a yen loan to the electricity sector. In the early years of assistance, emphasis was placed on developing infrastructure mainly in the energy sector. From the 1970s, the axis of assistance moved to developing local

infrastructure, such as power distribution to local areas, electrification of rural areas, and development of irrigation facilities, with the development objective of rectifying the gap between urban and local areas.

- With the economic development of Thailand, aid-based assistance to the country ended in 1993, in principle.
- Regarding present yen loans to Thailand, three important areas are cited in Japan's "Overseas Assistance Scheme by Country in 2002:" [1] measures for environmental protection in urban areas; [2] rectification of gaps between areas and between incomes; and, [3] human resources development.

(6) Outline of assistance to Vietnam

- Large-scale assistance to Vietnam began in 1992. Since 1995, Japan has been the largest donor country to Vietnam.
- Among assistance provided to Vietnam, five important areas are cited in Japan's "Overseas Assistance Scheme by Country in 2000:" [1] human resources development; [2] development of electricity- and transportation-related infrastructures; [3] rural development; [4] education and public health; and, [5] the environment.
- In Japan's "Overseas Assistance Scheme by Country," which was revised in April 2004, three areas are listed as important areas to be focused upon in the future: [1] promotion of growth; [2] improvements in living and social conditions; and, [3] institutional development.
- Also, as the method of assistance, it states "Japan will move toward choosing and adopting assistance items based on dialogues, not at the request of a recipient country." This is aimed at coordinating the development assistance needs of Vietnam with the assistance policies of Japan by holding policy discussions on Japan's mid-term overseas assistance vision by sector, before receiving a request for assistance from Vietnam.

2.2 Trend of Assistance to the Mekong Region from Donors and NGOs

(1) GMS Program of Asian Development Bank

- The Greater Mekong Subregion (GMS) Program was started in 1992 at the initiative of the Asian Development Bank (ADB), targeting the six countries in the Mekong river basin (Cambodia, Laos, Myanmar, Thailand, Vietnam, and Yunnan Province of China).
- The program is administered under an informal and loose framework, and priority projects are selected through discussions among the countries concerned.
- At first, emphasis was placed on establishing trust among the countries and the development of cross-border infrastructure (roads, communications, and electricity). But later, it moved towards improving mutual cooperation among countries in non-structural (software) fields such as simplification of customs procedures, in addition to improving infrastructure. The priority areas at present are linkages between infrastructure improvement and economic development, problems related to investment and trade, environmental problems, and development of tourism.

- In November 2001, the “GMS 10-year Strategy” was announced, which established five strategic development thrusts and 11 flagship programs. The five strategic development thrusts are “Strengthen infrastructure linkages through a multisectoral approach”, “Facilitate cross-border trade and investment”, “Enhance private sector participation in development and improve its competitiveness”, “Develop human resources and skill competencies” and “Protect the environment and promote the sustainable use of the subregion’s shared natural resources”. The 11 flagship programs are “The North-South Economic Corridor”, “The East-West Economic Corridor”, “The Southern Economic Corridor”, “Telecommunications Backbone and Information and Communications Technology (ICT)”, “Regional Power Interconnection and Trading Agreements”, “Facilitating Cross-Border Trade and Investment”, “Enhancing Private Sector Participation and Competitiveness”, “Developing Human Resources and Skills Competencies”, “Strategic Environment Framework”, “Flood Control and Water Resource Management” and “GMS Tourism Development ”.
- As part of the GMS program, the “GMS Summit” was held in November 2002 to discuss development of the Mekong region, and the first such conference at the prime minister level.
- In 2004, the “Regional Cooperation Strategy and Program (RCSP): 2004-2008 The GMS-Beyond Borders” describing future assistance policies to the GMS was announced, together with the unveiling of the “Development Matrix,” which is a database of individual projects.
- A ministerial meeting is scheduled to be held in Vientiane in December 2004, where the “Cross-border Transportation Agreement: Stage 2” is expected to be concluded. The second “GMS Summit” is slated to take place in Kunming, China in July 2005.

(2) Mekong River Commission

- In April 1995, four countries in the lower reaches of the Mekong River (Cambodia, Laos, Thailand, and Vietnam) concluded an agreement on the sustainable development in the Mekong river basin. Based on this agreement, the Mekong River Commission (MRC) was established.
- Myanmar and China have been participating in various activities of the MRC as the “Dialogue Partner” since 1996.
- The subject areas covered by the MRC include “Navigation,” “Flood control,” “Agriculture,” “Fishery,” “Hydroelectric power generation,” and “Conservation of the environment,” etc.
- The MRC has formulated a strategic plan for 2001-2005. As part of the strategic plan, formulation of the “Rules for Water Utilization and Inter-Basin Diversions” and “Basin Development Plan” has been proposed and its deliberation is underway.

(3) ACMECS (Ayeyawady – Chao Phraya – Mekong Economic Cooperation Strategy)

- In April 2003, an agreement on economic cooperation was reached on the “Ayeyawady – Chao Phraya – Mekong Economic Cooperation Strategy” (ACMECS) among the four countries of Cambodia, Laos, Myanmar, and Thailand. Six policy objectives were cited: [1] Strengthening economic competitiveness of the four countries; [2] Achieving economic growth in border areas; [3] Relocating agricultural and industrial facilities to areas having high competitiveness; [4] Creating employment opportunities; [5] Rectifying income gaps; and, [6] Peace, Stability, and active use of common resources in a sustainable manner.
- Thailand is currently planning development projects in concrete form, such as key area development at borders with other countries (Thailand-Cambodia border: Koh Kong, Poipet; Thailand-Laos border: Savannakhet; Thailand-Myanmar border: Mae Sot, etc.) and support for the development of an economic corridor (Myawadi-Mawlamyine).

(4) Others

- The “ASEAN Mekong Basin Development Cooperation (AMBDC),” which was inaugurated in 1996, is a framework formulated by ASEAN itself for the development of the Mekong river basin. The major areas of focus are traffic/ transportation (including construction of a railway linking Singapore and Kunming, China), trade, and human resources development.
- In 2000, the “Initiative for ASEAN Integration” was agreed among the prime ministers of ASEAN countries. To reduce gaps between old and new ASEAN members and to improve regional competitiveness, three priority areas were selected: [1] Development of infrastructure; [2] Human resources development; and, [3] Information communication technology, and old member countries are to assist new member countries (Cambodia, Laos, Myanmar, and Vietnam).
- Since 1959, the Economic and Social Commission for Asia and the Pacific (ESCAP) of the United Nations has been promoting the Asian Highway (AH) project, which is a road network connecting Asian countries. In April 2004, at the ESCAP conference held in Shanghai, China, 26 countries out of related 32 countries signed the “Intergovernmental Agreement concerning the Asian Highway Network.”
- Besides the above, the “GMS-Business Forum” (GMS-BF) was established by the ADB and the ESCAP in 2000 to promote private investment. Since then, it has been continuing activities for promoting regional economic integration in collaboration with chambers of commerce and industry and companies in the GMS region.

3. Future Assistance to the Mekong Region in the Infrastructure Sector

3.1 Direction of Development and Tasks of Infrastructure

3.1.1 Direction of Development in the Mekong Region

(1) Realization of sustainable economic growth through strengthening economic collaboration

- The driving force of economic growth in the Mekong region is rapidly increasing trade within the region by China, Thailand, and Vietnam, and external trade, which are attaining high growth rates. In particular, north-south trade is expanding, such as trade between Yunnan Province in China and Thailand or Vietnam.
- On the other hand, development of infrastructure that supports trade within the region has been slow because of persistent civil conflicts and other factors. In general, the cross-border infrastructure has great potential as a network and its development is strongly required as an international public asset. However, sufficient development of cross-border infrastructure is impossible if development is undertaken by individual countries.
- As for infrastructure development on the north-south axis that runs through Thailand, Yunnan Province of China, and Vietnam, positive development efforts by the countries can be expected, independent of assistance from Japan, because the countries are engines for economic growth in the region. On the other hand, as for the east-west axis linking Myanmar, Thailand, Laos, and Vietnam, the potential for trade and exchanges is high in view of the population and the potential for economic development. But, development of infrastructure that supports economic activities on this east-west axis will not advance if it is left only in the hands of the related countries, partly because of a lack of consensus on interests. However, if the economic and social collaboration is attained on the east-west axis through infrastructure development, it will contribute to improving stability in the Mekong region.
- Basic problems related to life, such as poverty and high infant mortality rate, need to be solved. Therefore, to increase trade and expand growth in the region, it is necessary to improve the investment environment by developing infrastructure using public funds.
- However, in terms of highly effective project design to be derived from quantitative traffic data, infrastructure developments on both the north-south axis and the east-west axis are not necessarily satisfactory. To enable efficient and effective infrastructure development, it is necessary to improve data, to execute adequate analyses, and to formulate an appropriate implementation plan. Preparing such an implementation plan based on reliable data will also contribute to encouraging private investment.
- Because development of such a cross-border network might have negative effects, such as a cross-border expansion of a drug smuggling/crime and an increased load on the environment, measures will be taken to alleviate those effects.
- Thailand, which has attained a higher level of growth than other countries, holds an important position in trade, investment, and physical distribution in the Mekong region. Trends in this country are central to the sustainable development of the region.

(2) Alleviation of poverty and strengthening of regional integrity

- Achieving the millennium development goals is an important task. The most urgent task is to rectify gaps within the region so that basic living standards can be guaranteed at minimum. This will eventually contribute to avoiding conflicts and assuring the stability of the region.
- Myanmar, northeastern Thailand, southern Laos, northern Cambodia, and central Vietnam are the poorest areas in the Mekong region. Raising economic standards in these areas is important to secure the stability of the region and regional integrity.
- To have infrastructure development contribute to pro-poor growth, the following measures will be taken as a package combined with infrastructure development: measures that will have a direct impact on poor people (public health, education, access roads in local areas, etc.); measures that will give benefits to poor people through the growth via economic linkages (promotion of migration of labor force within sector and region, expansion of demand, etc.); and measures that will promote equitability development while complementing market principle-based measures (subsidies, public investment, financial policies, etc.).

(3) Disaster prevention and environmental conservation with the Mekong River as the axis

- Inundation damage due to flooding occurs every year in the Mekong river basin. The frequent occurrence of inundation not only causes loss of life and property, which are the bases of the economic and social development, but also prevents the development of the region as it poses a major risk to a new investment.
- Improving the safety of the region against flooding by taking flood mitigation measures is an important task for the economic development of the region.
- Along with economic growth in recent years, environmental deterioration is advancing in the Mekong region. Therefore, when planning or implementing a development plan, measures will be taken to minimize environmental impact.
- In the Mekong region, the “Mekong River Commission” (MRC) has been established on the basis of the “Cooperative Agreement Concerning the Sustainable Development of the Mekong River Basin,” which was concluded among Thailand, Laos, Vietnam, and Cambodia in 1995.
- This agreement states that natural resources and the natural environment along the Mekong River basin are important natural assets for economic growth, social welfare, and improving living standards of all basin countries, and that it is important to seek development while protecting those properties.
- When developing the Mekong region, it is important to realize the vision of the above agreement to avoid conflicts related to water utilization. For that purpose, it is effective to support regional level programs that are being promoted under the leadership of the Mekong River Commission.

- To solve various problems related to water resources in the countries of the Mekong region, using water management technologies that have been accumulated in Japan appears to be effective. It is considered meaningful to support the efforts of the Mekong River Commission and other related organs, in such fields as establishing water utilization rules and navigation rules, building a consensus that includes public involvement, and water resources management that includes collecting scientific data and analysis technology.

3.1.2 Tasks of Infrastructure Development

Based on the direction of Mekong region development in the future mentioned in Item 3.1.1, it is known that the following challenges must be addressed concerning the development of infrastructure in the region. Here, the term infrastructure means only those items related to transportation (roads, railways, water transport and airport), water supply and sewerage, electricity and energy, and flood control and water resources.

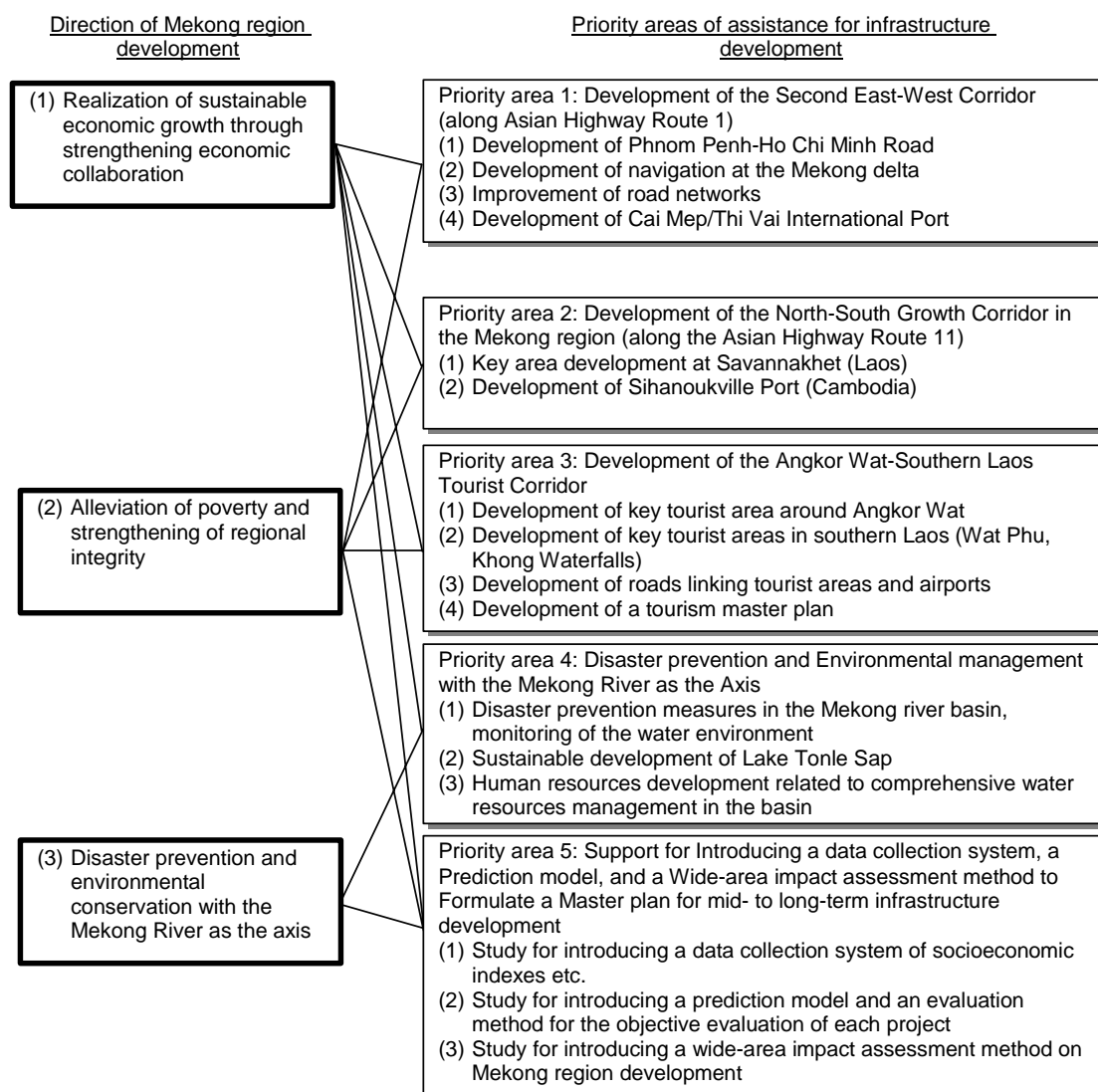
- Development of three economic corridors, namely, North-South Economic Corridor, East-West Economic Corridor, and Second East-West (Southern) Economic Corridor, has been underway in accordance with the GMS program of the Asian Development Bank (ADB). The most advanced development is seen in the road infrastructure of the East-West Corridor, such as construction of the Second Mekong International Bridge, which has been actively supported by Japan. But, infrastructure development is still needed before making the East-West Corridor the real East-West Economic Corridor. This includes development of harbors at both ends of the East-West Corridor, development of key economic areas at national borders and at cross points with other corridors, and development of tourist facilities.
- With regard to the North-South Corridor and the Second East-West (Southern) Corridor, it is necessary to continue development of harbors, development of key economic areas at the national borders and at the cross points with other corridors, and development of tourist facilities in the same way is being done in the East-West Corridor, while continuing development of artery road networks.
- In addition to these developments in corridors and key areas along the axis, it is necessary to develop infrastructure along branches of these corridors and to strengthen relations with local areas in order to widely diffuse the economic effects of the corridors and contribute to poverty reduction in local areas. It is also necessary to try to introduce a system similar to Japan's "Road Station" program (installation of service areas containing various useful facilities at the roadsides of ordinary roads to make them more serviceable to people).
- Together with the development of physical infrastructure, it is necessary carry out institutional development and build capacity.
- These three corridors are currently being developed mainly as a road network. Improving it into a comprehensive transportation network including a railway and a navigation channel, is a mid-to long-term task to be addressed in the future. In addition, formulating such a comprehensive transportation plan, collecting quantitative traffic data, and establishing a model development are required.

- It is also required to develop infrastructure to strengthen alliances with India, other ASEAN countries, China, and others, in addition to strengthening infrastructure networks within the GMS region.
- Concerning key areas in economic corridors where high economic development is expected, it is necessary to develop energy-related infrastructure (power generating facilities, power transmission facilities, pipelines, etc.), because energy demand is forecasted to increase in these areas.
- Infrastructure development in the Mekong region must be compatible with environmental conservation and social justice. For that purpose, the secondary effects of infrastructure development on environment and society must be carefully investigated, and necessary measures taken.
- Concerning water resources management in the Mekong region, distinctive interests exist in countries in the upper and lower reaches of the river; moreover, every project has environmental and social effects on the river basin. Therefore, it is necessary to strengthen systematic coordination from as early as the planning stage based on objective data on the region.

3.2 Details of Future Assistance in the Infrastructure Sector

Until now, Japan has extended economic cooperation for infrastructure development in the Mekong region in accordance with the “Greater Mekong Subregion (GMS) Program,” which was proposed by the Asian Development Bank (ADB) in 1992. But now, it is also required to formulate further policies in accordance with “Japan-ASEAN plan of action.” Therefore, while respecting the basic framework of the GMS Program, the priority areas of assistance from Japan for infrastructure development in the Mekong region have been determined as shown below, based on the direction and the tasks of future assistance mentioned in Section 3.1 above.*⁶

Five priority areas and 16 items consisting a total of 43 projects are extracted and proposed for implementation.



*⁶ In the “GMS 10-year Strategy,” which was agreed at the GMS summit in 2002, five strategic development thrusts are listed: Strengthen infrastructure linkages through a multisectoral approach; Facilitate cross-border trade and investment; enhance private sector participation in development and improve its competitiveness; Develop human resources and skill competences; and, Protect the environment and promote sustainable use of the subregion’s shared natural resources. In the “Regional Cooperation Strategy and Program 2004-2008 (2004) proposed by the ADB, three GMS visions are listed—Connectivity, Competitiveness, and Community.

After establishing priority areas, priority projects are selected for each priority area.

Priority projects are selected by grouping them into short-term projects and mid-to long-term projects, mainly from among the projects proposed by the GMS Program and the projects requested to Japan by GMS countries.

The projects that are selected as the short-term projects are those that can support the growth of industries by having an immediate effect to local economy through foreign currency, in addition to projects for direct investment. As part of this selection process, the recent trend of trade and investment, such as the international division of work between production of parts and products, was taken into account.

Tables 1 through 5 on Page 23 and onward show priority projects in each priority area. The types of assistance shown in the column “project stage” in the tables, namely, technical cooperation, aid-based assistance, and loan-based assistance, are those presumed at present. Hence, they should be investigated in detail at their implementation stage as to which type of assistance is actually appropriate for the projects.

1. Development of the Second East-West Corridor (along Asian Highway Route 1)

Asian Highway Route 1 connecting Bangkok, Phnom Penh, and Ho Chi Minh, which will become the core of growth in the Mekong region, will be completed, development of the “Growth Belt (Second East-West Corridor)” will be promoted, and development of navigation at the Mekong Delta will be promoted, so that multi-modality between Phnom Penh and Ho Chi Minh will be attained.

Furthermore, to support road networks in the Mekong region, assistance for developing the Myanmar section of the Asian Highway Route 1 will be studied.

(1) Development of Phnom Penh-Ho Chi Minh Road

Among the sections of Asian Highway Route 1 passing through Vietnam, Cambodia, and Thailand that do not satisfy the minimum standard of a highway, the section between Phnom Penh and Neak Luong (about 55 km), which is not being undertaken by other donors, will be improved.

[Priority project]

(Note) The following priority projects correspond to those shown in the table. This applies to all of the priority projects shown hereafter.

- **1-1 Improvement of Cambodia National Road Route 1 (Phnom Penh-Neak Luong Section)**
- **1-2 Construction of the Second Mekong Bridge on Cambodia National Road Route 1**
- **1-3 Improvement of Phnom Penh Loop Road in Cambodia**
- **1-4 Development of “Road Station” on Asian Highway Route 1 (Vietnam)**
- **1-5 Development of “Road Station” on Asian Highway Route 1 (Cambodia)**

(2) Development of navigation at the Mekong delta

The river mouth of the Mekong delta has problems in terms of navigation, because sedimentation is advanced and virtually no dredging is done.

To reduce physical distribution costs in the southern part of Cambodia and others, navigation in at the Mekong delta will be developed. The development plan includes dredging of the river course to allow 5,000 - 10,000-ton class vessels to sail directly up to Phnom Penh, establishment of a signal system, specified as an international river, establishment of navigation rules, training of inland navigation crewmen, and introduction of a GPS navigation system.

[Priority project]

- **1-6 Mekong delta navigation development project (Vietnam)**
- **1-7 Mekong delta navigation development project (Cambodia)**

(3) Improvement of road networks

In response to the rough completion of the East-West Corridor and the Second East-West Corridor a few years from now, further improvements to road networks will be attempted. Prior to starting development work, an implementation plan enabling efficient and effective development will be prepared from quantitative traffic data on the basis of the Asian Highway route plan, and then priority sections will be extracted.

In addition to such a road improvement efforts, it is necessary to study introducing a guide system using GPS, tourist-oriented development in neighboring areas using “Road Stations,” and adoption of “one village one product” activities in Thailand. Furthermore, there is a need to improve safety facilities on roads, and to train personnel on tourism and marketing local products.

[Priority project]

- **1-8 Development of auxiliary roads along Asia Highway Route 1 in Myanmar**

(4) Development of Cai Mep/Thi Vai International Port

To respond to increasing cargo needs in southern Vietnam, which is undergoing rapid economic growth and to eliminate restrictions on the sizes of ships at river ports around Ho Chi Minh City, a deep-water international port will be constructed at the Cai Mep and Thi Vai areas on the outskirts of Ho Chi Minh City (this will become the largest port in the Mekong river basin).

[Priority project]

- **1-9 Development of Cai Mep/Thi Vai International Port**

[Project objective]

The first objective is to develop a network among mega-city areas to establish a sustainable growth base, and to respond adequately to infrastructure needs arising from economic growth.

The second objective is to reduce poverty through balanced development in the region. Namely, besides corridors serving as the core axes, a wide-area network connected to the corridors will be developed, thereby extending the growth potential to local areas.

Table 1 Priority projects related to Development of the Second East-West Corridor (along Asian Highway Route 1)

In progress: ●, short-term project: ⊙, mid-to long-term project: ○

Area	Project name	Country	Outline of project	Remarks	Rough project cost	Project stage				
						M/P	F/S	Technical cooperation	Aid-based assistance	Loan-based assistance
1. Development of the Second East-West Corridor (along Asian Highway Route 1)										
	1-1. Improvement of Cambodia National Road Route 1 (Phnom Penh-Neak Luong section)	Cambodia	Improvement of the road section between Phnom Penh and Neak Luong (about 55 km) of Cambodia National Road Route 1	B/D survey is in progress by JICA			● Completed		⊙	
	1-2. Construction of the Second Mekong Bridge on Cambodia National Road Route 1	Cambodia	Construction of a new bridge at the crossing of Cambodia National Road Route 1 over the Mekong River in Neak Luong	F/S is in progress by JICA			●		⊙	⊙
	1-3. Improvement of Phnom Penh Loop Road in Cambodia	Cambodia	Improvement of loop road section of Cambodia National Road Route 1 which bypasses the Phnom Penh city area			●	⊙		○	
	1-4. Development of “Road Stations” on Asian Highway Route 1	Vietnam	Development of “Road Stations” on Asian Highway Route 1			⊙	⊙		⊙	
	1-5. Development of “Road Stations” on Asian Highway Route 1	Cambodia	Development of “Road Stations” on Asian Highway Route 1			⊙	⊙		⊙	
	1-6. Mekong delta navigation development project	Vietnam	Preparation of a navigation master plan for the Mekong delta		100 million dollars (GMS Tien River channel improvement project)	⊙	○			○
	1-7. Mekong delta navigation development project	Cambodia	Preparation of a navigation master plan for the Mekong delta			⊙	○			
	1-8. Development of auxiliary roads along Asian Highway Route 1 in Myanmar	Myanmar	Development of an access road from Asian Highway Route 1 to the Moulmein Port in Myanmar	Thailand will provide assistance to the remaining section in Myanmar.			○		○	
	1-9. Development of Cai Mep/Thi Vai International Port	Vietnam	A deep-water international port allowing the large ships will be constructed at the Cai Mep and Thi Vai areas on the outskirts of Ho Chi Minh (this will become the largest port in the Mekong river basin).	D/D is in progress by JICA				●		⊙

2. Development of the North-South Growth Corridor in the Mekong region (along Asian Highway Route 11)

While continuing to support development of Sihanoukville Port (Cambodia), for which Japan has extended active support, support will also be extended to key-area development in Savannakhet (Laos) at the intersection of the East-West Corridor (Asian Highway Route 16) and Asia Highway Route 11.

(1) Key area development at Savannakhet (Laos)

Key-area development will be undertaken at Savannakhet, which is the city on the Laos side where the Second Mekong International Bridge (a bridge at the Thailand-Laos border) on the East-West Corridor is currently under construction, and where a power transmission project for southern Laos is being planned. Concerning construction of the Second Mekong International Bridge, it is also necessary to study establishing road-use rules (such as open 24-hours a day) and introduction of a mutual communications system.

Consideration is also needed to expand the effects of this key-area development by improving local roads connected to Asian Highway Route 16, which passes through Savannakhet, and by installing community centers along the roads. Also, aiming at deriving synergistic effects, improvement of Savannakhet Airport will be attempted in cooperation with Thailand. Technical cooperation will also be extended to human resources development for air traffic control in Laos.

[Priority project]

- **2-1 Construction of the Second Mekong International Bridge (Thailand)**
- **2-2 Construction of the Second Mekong International Bridge (Laos)**
- **2-3 Improvement of city roads and roadside areas in Savannakhet**
- **2-4 Improvement of local roads connected to Asian Highway Route 16**
- **2-5 Installation of community centers along Asian Highway Route 16**
- **2-6 Improvement of Savannakhet Airport**
- **2-7 Human resources development for air traffic control in Laos**

(2) Development of Sihanoukville Port (Cambodia)

Sihanoukville Port is the only sea port in Cambodia that is contributing to steady economic growth. To alleviate the potential shortage of capacity of this port, expansion of the container berth and installation of cargo-handling equipment will be carried out as the second-stage project, following the first-stage container berth improvement project which has been completed. In addition, an existing railway will be rehabilitated as part of the development project for the growth corridor linking Sihanoukville Port and Phnom Penh.

[Priority project]

- **2-8 Sihanoukville Port Urgent Rehabilitation Project**
- **2-9 Improvement of an existing railway linking Sihanoukville and Phnom Penh**

[Project objective]

The first objective is to provide, on a short-term basis, bases that can invite private investment by putting collective investment into newly emerging key areas (Savannakhet, Sihanoukville) as the project to produce immediate effects.

The second objective is to mitigate poverty through the balanced development of the area.

As this north-south corridor does not have any conditions that can invite investment spontaneously, infrastructure will be developed to create demand, such as sales of local products, offering of services, vitalization of the area through tourism, which will be attained by expanding the transportation network.

Table 2 Priority projects related to Development of the North-South Growth Corridor in the Mekong region (along Asian Highway Route 11)

In progress: ●, short-term project: ⊙, mid-to long-term project: ○

Area	Project name	Country	Outline of project	Remarks	Rough project cost	Project stage				
						M/P	F/S	Technical cooperation	Aid-based assistance	Loan-based assistance
2. Development of the North-South Growth Corridor in the Mekong region (along Asian Highway Route 11)										
	2-1. Construction of the Second Mekong International Bridge	Thailand	Construction of a new bridge at the crossing of the East-West Corridor (Asian Highway Route 16) over the Mekong River	Yen loan						●
	2-2. Construction of the Second Mekong International Bridge	Laos	Construction of a new bridge at the crossing of the East-West Corridor (Asian Highway Route 16) over the Mekong River	Yen loan						●
	2-3. Improvement of city roads and roadside areas in Savannakhet	Laos	Improvement of road conditions and traffic flow in the city (expansion of roads, installation of traffic signals, green belts, roadside trees, and drainage ditches)		Approx. 2 - 3 billion yen (including the development of 115 kV power transmission lines and key areas at the border with Vietnam)	⊙	⊙		⊙	
	2-4. Improvement of local roads connected to Asian Highway Route 16	Laos	Improvement of the 10-km section of local (prefectural) roads connected to National Road Route 9			⊙	⊙		⊙	
	2-5. Installation of community centers along Asian Highway Route 16	Laos	Installation of key facilities for local people along the above local (prefectural) roads and National Road Route 9			⊙	⊙		⊙	
	2-6. Improvement of Savannakhet Airport	Laos	International airport of Laos located at Savannakhet		17 million dollars		⊙		○	
	2-7. Human resources development for air traffic control in Laos	Laos	Improvement of functions of existing flight personnel training center, development of human resources for air traffic control at international and domestic airports, and offering necessary equipment					⊙		
	2-8. Sihanoukville Port Urgent Rehabilitation Project	Cambodia	To alleviate the potential shortage of capacity of this port, expansion of the container berth and installation of cargo-handling equipment will be carried out as the second-stage project, following the first-stage container berth improvement project which has been completed.					⊙		●
	2-9. Improvement of existing railway linking Sihanoukville and Phnom Penh	Cambodia	Rehabilitation of railway section between Sihanoukville and Phnom Penh	Improvement between Phnom Penh and Sisophon will be carried out by ADB		○				○

3. Development of the Angkor Wat-Southern Laos Tourist Corridor

Key area development will be attempted to enhance the attractiveness of internationally known tourist resources, represented by cultural heritage sites such as Angkor Wat in Cambodia and Wat Phu in southern Laos, and natural heritage sites such as Khong Waterfalls at the Laos-Cambodia border. Then, through assistance to develop a transport network linking these key areas, a tour route will be secured to establish the “Tourist Corridor.”

(1) Development of key tourist area around Angkor Wat

To further enhance the attractiveness of Angkor Wat, which is a renowned international tourist resource, conservation of neighboring forests, improvement of water environment, and removal of land mines will be attempted.

Support is also needed for tourist-related activities, such as deepening understanding of the cultural value of Angkor Wat among foreigners and Cambodians, and improving the hospitality of local people towards tourists.

In addition, to expand the effects of development widely, a comprehensive survey for planning of sustainable vitalization of the Siem Reap/Angkor Wat area will be carried out.

[Priority project]

- **3-1 Siem Reap/Angkor Wat water environment improvement project**
- **3-2 Siem Reap eco-tourism project**
- **3-3 Comprehensive survey for planning sustainable vitalization of the Siem Reap/Angkor Wat area**

(2) Development of key tourist areas in southern Laos (Wat Phu, Khong Waterfalls)

To improve access to and the attractiveness of Wat Phu and Khong Waterfalls, which are tourist resources in southern Laos, efforts will be made to improve the Town of Wat Phu and support promotion of sightseeing around Khong Waterfalls.

[Priority project]

- **3-4 Wat Phu Town base improvement**
- **3-5 Support for the promotion of sightseeing around Khong Waterfalls**

(3) Development of roads linking tourist areas and airports

To connect tourist resources scattered throughout this area and to encourage round-trip tours, a round-trip tour route will be developed, with airports in Pakse and Siem Reap using as start/end points. To facilitate development of a tour route, improvement of roads and airports will be advanced.

[Priority project]

- **3-6 Improvement of roads on the right bank (Wat Phu side) of the Mekong River**
- **3-7 Improvement of roads between Siem Reap and Stung Treng (approximately 250 km)**
- **3-8 Improvement of Pakse Airport**

(4) Development of a tourism master plan

Besides the tourist spots mentioned above, many tourist resources within the Mekong region are designated as world heritage sites. Therefore, to select priority investment targets related to tourist resources, a tourism master plan taking the entire Mekong region into view will be formulated.

[Priority project]

- **3-9 Development of a Mekong region tourism master plan**

[Project objective]

The overall objectives of tourism development are twofold: [1] use of resources in areas having a tourist potential; [2] promotion of areas without any particular growth base except tourist spots (and mitigation of poverty).

The first objective is to generate further tourist demand and invite more tourists by making collective investments to enhance the attractiveness of tourist resources, because world-class tourist resources such as Angkor Wat exist in the Mekong region. Besides Angkor Wat, many other world heritage sites are available in the Mekong region, such as Hue in Vietnam, Van Chiang Archeological site in Thailand, and Luang Prabang in Laos. Therefore, development of a wide-area tourist route can be expected in the future.

The second objective is to generate tourist demand and to activate poor areas without any particular growth base except tourist spots, such as the southern Laos area (Khong Waterfalls, Wat Phu), by making collective investments to enhance the attractiveness of tourist resources and to improve access and tourist-receiving facilities in the areas.

In addition, increased exchanges derived from the development of a round tour route will be used for promoting the industry (sales of local products, offering of services, and sightseeing) in areas other than tourist spots, thereby activating areas without any particular growth base and mitigating poverty in those areas.

Table 3 Priority projects related to Development of the Angkor Wat-Southern Laos Tourist Corridor

In progress: ●, short-term project: ⊙, mid-to long-term project: ○

Area	Project name	Country	Outline of project	Remarks	Rough project cost (billion dollars)	Project stage				
						M/P	F/S	Technical cooperation	Aid-based assistance	Loan-based assistance
3. Development of the Angkor Wat-Southern Laos Tourist Corridor										
	3-1. Siem Reap/Angkor Wat water environment improvement project	Cambodia	Improvement of the drainage and sewerage environment in Siem Reap			⊙	⊙		○	
	3-2. Siem Reap eco-tourism project	Cambodia	Development of the natural sightseeing area including Angkor Wat temple site, Lake Tonle Sap, Phnom Kulen National Park		2.3 million dollars (GMS)		⊙	○		
	3-3. Comprehensive survey for planning sustainable vitalization of the Siem Reap/Angkor Wat area	Cambodia	Comprehensive development of Siem Reap			●	⊙		○	○
	3-4. Wat Phu Town base improvement	Laos	Town improvement (grass-root schools, hospitable activities, improvement of drainage channels) to make Wat Phu temple site a tourist area		Approx. 1 - 2 billion yen		⊙		⊙	
	3-5. Support for the promotion of sightseeing around Khong Waterfalls	Laos	Support for the promotion of sightseeing around Khong Waterfalls (natural resource) and nearby ruins				⊙		⊙	
	3-6. Improvement of roads on the right bank (Wat Phu side) of the Mekong River	Laos	Improvement of National Road Route 14 on the right bank of the Mekong River which runs for the south from the Pakse Bridge					⊙		○
	3-7. Improvement of roads between Siem Reap and Stung Treng	Cambodia	Improvement of roads (approx. 250 km) between Siem Reap (key city for sightseeing of Angkor Wat) and Stung Treng (key city of the north-south corridor)		Approx. 15 billion yen (GMS)	⊙	○			
	3-8. Improvement of Pakse Airport	Laos	Improvement of Pakse Airport which will be the start/end point of a round tour route from Angkor Wat, Khong Waterfalls, to Wat Phu				○			
	3-9. Development of a Mekong region tourism master plan	Wide area	Preparation of a tourism master plan taking the entire Greater Mekong Subregion (GMS) into view			⊙				

4. Disaster prevention and Environmental management with the Mekong River as the Axis

To improve responses to disasters that frequently occur in the Mekong river basin and to strengthen environmental management of the basin by taking the Mekong River (a natural resource communalized by regional countries) as the axis, establishment of a data collection system, a data improvement system, and an upper and lower river flow regulation system will be attempted.

Support will also be extended for the sustainable development of Lake Tonle Sap, which has a distinctive environment among the natural systems in the Mekong river basin.

(1) Disaster prevention measures in the Mekong river basin, monitoring of the water environment

In view of the fact that inundation damage due to flooding is hampering development of the Mekong region, improving the information base and preparing inundation area maps will be attempted to strengthen the disaster prevention measures along the Mekong River. Then, using such information and maps, flood prevention measures and river bank erosion prevention measures will be formulated. Also, various data consolidated through these efforts will be used for monitoring of the water environment.

[Priority project]

- **4-1 Improvement of information base on the Mekong River**
- **4-2 Preparation of Mekong River inundation maps using the “Global Map” *⁷**
- **4-3 Formulation of flood mitigation measures based on river inundation information**
- **4-4 Development of erosion prevention measures for the Mekong River bank at the Laos-Thailand border (Laos)**
- **4-5 Development of erosion prevention measures for the Mekong River bank at the Laos-Thailand border (Thailand)**
- **4-6 Support to develop tools for hydraulic, environmental, and social impact assessments**

(2) Sustainable development of Lake Tonle Sap

Sustainable development of Lake Tonle Sap will be advanced from a holistic standpoint that includes disaster prevention, environmental improvement, and protection of fishery resources.

[Priority project]

- **4-7 Improvement of Tonle Sap Port and Phnom Penh Port**
- **4-8 Establishment of Tonle Sap basin management organization**

*⁷ This project is proposed by the Ministry of Construction (currently, the Ministry of Land, Infrastructure and Transport). It is intended to develop a digital map (Global Map) of the entire Earth indicating the present situation of the global environment, in cooperation with map-making institutions around the world.

[Reference] <http://www1.gsi.go.jp/geowww/globalmap-gsi/globalmap-gsi.html>

- **4-9 Study on water level regulation at Lake Tonle Sap**
- **4-10 Study on water quality improvement at Lake Tonle Sap**

(3) Human resources development related to comprehensive water resources management in the basin

In addition to the development of (1) and (2), support will also be extended to developing human resources for comprehensive water resource management in the basin.

In particular, to minimize damage due to flooding, it is necessary to improve risk management using the information base improved in Project (1). For that purpose, human resources will be developed by expanding existing training programs, as well as by making use of Network of Asian River Basin Organizations (NARBO) and International Flood Network (IFNet).

[Priority project]

- **4-11 Human resources development related to comprehensive water resources management in the basin**

[Project objective]

Because frequent inundation damage is preventing development in the Mekong region, urgent measures must be taken to improve the situation.

However, in the case of the Mekong region, it is difficult to obtain a consensus, such as that reached in Japan, on keeping a balance between upper and lower flows or between right and left banks, and for taking consistent flood control measures in the entire water system. Therefore, as a practical approach, measures to mitigate human and physical flood damage as much as possible will be taken preferentially. Measures for mitigating inundation damage will be taken by improving hydrological data, developing an information base on river, and human resources development, as well as through lot-level efforts such as raising housing land and constructing small-scale embankments.

Various data on flood damage mitigation can also be used for environmental conservation.

In addition, accumulated monitoring results can be used not only for identifying disaster hazard levels but also for calculating the cost effectiveness of disaster prevention investment, which can be directed to the further encouraging disaster prevention investment.

1. Table 4 Priority projects related to Disaster prevention and Environmental management with the Mekong River as the Axis

In progress: ●, short-term project: ⊙, mid-to long-term project: ○

Area	Project name	Country	Outline of project	Remarks	Rough project cost	Request of support (Y/N)	Project stage				
							M/P	F/S	Technical cooperation	Aid-based assistance	Loan-based assistance
4. Disaster prevention and Environmental management with the Mekong River as the Axis											
	4-1. Improving information base on the Mekong River	Wide area	Collecting data on water resources, establishment of monitoring database, and improving access to data		2 million dollars (GMS)				⊙		
	4-2. Preparation of Mekong River inundation maps using the "Global Map"	Wide area	Preparation of Mekong River inundation maps and technical transfer of hazard map preparation technology						⊙		
	4-3. Formulation of flood mitigation measures based on river inundation information	Wide area	Raising of inundation-prone roads, installation of bridges, embankments, and weirs						⊙		
	4-4. Development of erosion prevention measures for the Mekong River bank at the Laos-Thailand border	Laos	Institutional development to widely diffuse river bank erosion control technology which is underway in Vientiane as a pilot project	Pilot project is under way by JICA				●	⊙		
	4-5. Development of erosion prevention measures for the Mekong River bank at the Laos-Thailand border	Thailand	Technical cooperation and institutional development for erosion-prevention measures on the Thai side banks of the Mekong River						⊙		
	4-6. Support to develop tools for hydraulic, environmental, and social impact assessments	Wide area	Support to develop tools for hydraulic, environmental, and social impact assessments in the Mekong river basin						⊙		
	4-7. Improvement of Tonle Sap Port and Phnom Penh Port	Cambodia	Improvement of Tonle Sap Lake Port and Phnom Penh River Port in consideration of fluctuations of water level and water edge line				⊙	○		○	
	4-8. Establishment of Tonle Sap basin management organization	Cambodia	Establishment of public corporation to supervise comprehensive management of the Tonle Sap basin	Know-how of Japan Water Agency is used.					⊙		
	4-9. Study on water level regulation at Lake Tonle Sap	Cambodia	Study to secure navigation throughout the year including flood control, flood forecasting and warning				⊙	⊙			○
	4-10. Study on water quality improvement at Lake Tonle Sap	Cambodia	Study for wastewater control at cities around Lake Tonle Sap and for water quality improvement with monitoring of lake water				⊙	○			
	4-11. Human resources development related to comprehensive water resources management in the basin	Wide area	Introduction of human resources development program, training within the basin, personnel exchange promotion program, for comprehensive water resources management in the basin						⊙		

5. Support for Introducing a data collection system, a Prediction model, and a Wide-area impact assessment method to Formulate a Master plan for mid- to long-term infrastructure development

To formulate a master plan enabling systematic and efficient mid- to long-term infrastructure development in the Mekong region, support will be extended for developing a data-collection system for items such as socioeconomic indexes, introduction of a systematic prediction model, and an evaluation method, which will be necessary for evaluating each project objectively.

Support will also be extended for the introducing a wide-area impact assessment method to assist infrastructure development that promote sustainable development in the Mekong region.

(1) Study for introducing a data collection system of socioeconomic indexes etc.

It is necessary to improve collection systems of statistical data, which are the basis of systematic and efficient mid- to long-term infrastructure development.

[Priority project]

- **5-1 Development of a collection system on traffic volume and transportation volume by OD in the Mekong region**
- **5-2 Support for collecting detailed data and improving data accuracy such as socioeconomic indexes of each country in the Mekong region**

(2) Study for introducing a prediction model and an evaluation method for the objective evaluation of each project

It is necessary to introduce a prediction model and an evaluation method to evaluate each project objectively based on the data obtained in (1).

[Priority project]

- **5-3 Study on Asian Highway physical distribution model**

(3) Study for introducing a wide-area impact assessment method on Mekong region development

When developing infrastructures in the Mekong region, it is necessary to study the introduction of negative effect mitigation measures associated with developing a wide-area network, and introducing an evaluation method on the effects on other countries, such as the a trans-boundary impact assessment.

[Priority project]

- **5-4 Study on negative effect mitigation measures associated with the development of a wide-area network**
- **5-5 Study for introducing trans-boundary impact assessment**

[Project objective]

Infrastructure development projects in the Mekong region until now have, in a sense, been merely a conglomeration of various projects planned by each country or area independently in accordance with their own demand forecasts or desires. Hence, they have not been carried out in a priority order based on various criteria such as the efficiency of physical distribution and passenger transportation, and quantitative effects of investment on the whole Mekong region.

Therefore, to make best use of limited resources (funds etc.), and to obtain the best possible effects, the project objectives are to determine the priorities of various projects, to prepare investment plans, and to formulate development strategies and infrastructure improvement strategies, based on the results of quantitative data analysis.

Table 5 Priority projects related to Support for Introducing a data-collection system, a Prediction model, and a Wide-area impact assessment method to Formulate of a Master plan for mid- to long-term infrastructure development

In progress: ●, short-term project: ⊙, mid-to long-term project: ○

Area	Project name	Country	Outline of project	Remarks	Rough project cost	Request of support (Y/N)	Project stage				
							M/P	F/S	Technical cooperation	Aid-based assistance	Loan-based assistance
5. Support for Introducing a data collection system, a Prediction model, and a Wide-area impact assessment method to Formulate a Master plan for mid- to long-term infrastructure development											
	5-1. Development of a collection system on traffic volume and transportation volume by OD in the Mekong region	Wide area	Development of a collection system on traffic volume and transportation volume by OD in the Mekong region						⊙		
	5-2. Support for collecting detailed data and improving data accuracy such as socioeconomic indexes of each country in the Mekong region	Wide area	Support for collecting detailed data and improving data accuracy such as socioeconomic indexes of each country in the Mekong region						⊙		
	5-3. Study on Asian Highway physical distribution model	Wide area	Development of a physical distribution model to determine priority development sections of the Asian Highway						⊙		
	5-4. Study on negative effect mitigation measures associated with the development of a wide-area network	Wide area	Study on non-structural measures for mitigating negative effects (drugs, crime, environmental loads, etc.) associated with the development of a wide-area network						⊙		
	5-5. Study for the introducing trans-boundary impact assessment	Wide area	Development of an assessment method and system for impacts on other areas, small river basins, and the whole basin area, caused by infrastructure development						⊙		

3.3 Ways to Advance Assistance

So far, projects that should be advanced preferentially for developing the Mekong region have been extracted. However, various problems can arise when attempting to initiate projects. To achieve highly effective assistance, it should be advanced in the following way.

3.3.1 Comprehensive assistance in the infrastructure sector

For the development of the infrastructure sector, it is necessary to provide not only spot-type assistance such as the construction of physical structures, but also comprehensive assistance including improving policy, institutions, and maintenance aimed at completely solving various problems in each sector. Also, for the efficient operation of infrastructure, cooperation with the private sector should be considered sufficiently.

To achieve the above objective, it is essential to advance assistance efforts by interlinking loan-based assistance, aid-based assistance, and technical cooperation organically. It is also required to cooperate with international organizations to make bilateral assistance more productive using funds delivered to the Asian Development Bank (ADB), the Mekong River Commission (MRC), etc.

It is also important that the Ministry of Land, Infrastructure and Transport of Japan, which has extensive experience, human resources, and expertise in the fields of planning, development, maintenance, and administration of infrastructure, should extend such support as well.

Example 1: complicated customs procedures

- As complicated customs procedures are becoming a bottleneck for physical distribution in the Mekong region, improving customs clearance systems, such as through single-stop clearance and mutual certification, will also be sought when developing a cross-border road network, in collaboration with a customs procedures improvement project now being negotiated at the Japan-ASEAN meeting of transportation ministers.

Example 2: high cost of harbor use

- To improve international competitiveness, it is necessary to solve such problems as the high cost of harbor use. An efficient operation scheme must be conceived, such as entrusting port facility operations to the private sector.

Example 3: railway management in need of improvement

- When improving a railway network, it is necessary to improve the management of its administrative body simultaneously. In terms of achieving management efficiency, using private sector vitality will also be considered.

3.3.2 Coordination with non-infrastructure sectors

Infrastructure development may cause a growth gap between areas that can enjoy the benefits of development and areas unable to access such benefits. Although the emergence of this type of gap is considered to be unavoidable in the process of economic growth, efforts to alleviate such a gap must be taken. Therefore, it is important to provide support in fields beyond the infrastructure sector, such as social welfare, to areas that cannot receive the benefits of infrastructure development, through close coordination with sectors outside the infrastructure sector.

3.3.3 Communalization of a development vision for the Mekong region

When developing infrastructure, there is a possibility that a gap will be caused between the priorities from the perspective of the entire Mekong region and from each country. Therefore, to advance infrastructure development efficiently and effectively from the perspective of the entire Mekong region, it is important for Japan to present a region-wide development vision to every country in the Mekong region, and to communalize it with them through policy negotiations.

It is also important to communicate Japan's development vision to the donor community and to advance a regional development vision in an integrated manner in cooperation with other donors on a long-term basis. For that purpose, exchanges of opinions among donors must be actively encouraged, for example, on the basis of present recommendations.

Thailand is one of assistance-receiving countries in the Mekong region, but in recent years it has also been a donor country extending assistance to other countries in the basin through the Ayeyawady-Chao Phraya-Mekong Economic Cooperation Strategy (ACMECS). Hence, Japan must communalize information and cooperate with Thailand as donor countries.

3.3.4 Cooperation with international organizations to provide support from policy formulation and planning stages

To advance infrastructure development based on a region-wide development vision as mentioned above, support should begin from policy formulation and planning stages. Therefore, communalization of information and cooperation with international organizations such as the Asia Development Bank (ADB) and the Mekong River Commission (MRC) must also be started from policy formulation and planning stages.

To enhance communalization of information and cooperation with international organizations, it is essential for Japan to actively make technical proposals and offer information, as well as improve the quality of information shared. To enable efficient provision of high-quality information, communalization of information should be promoted through the joint efforts of the Japanese Government and support organizations.

3.3.5 Coordination of interests among countries in the Mekong region

To facilitate infrastructure development in the fields of navigation, disaster prevention, water utilization, and environment at this international river, it is important to coordinate the interests of upstream and downstream areas and between right and left banks where conflicts of interests tend to

occur. The Mekong River Commission (MRC) has been established as the organ coordinating interests in the Mekong region. Together with assistance for infrastructure development, Japan should appeal to GMS countries having conflicting interests to cooperate with the MRC, to provide support of human resources to the MRC, and to promote consensus-building among countries in the Mekong region.

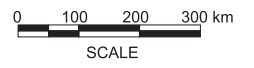
3.3.6 Study on a new assistance system

To effectively promote a wide-region development project spanning multiple countries in the Mekong region, with Japan taking a leadership role, it is necessary to take new measures, such as allocating some amount to a wide-area project having cross-border effects out of the total budget appropriated for bilateral assistance using a separate framework.

3.3.7 Continuity of development vision and periodic review

To carry out a wide-area development project such as the Mekong region development, both a long-term effort and a flexible approach are required, as socioeconomic changes occur very quickly in this region where the speed of growth is very fast.

Therefore, development vision, priority projects, and other development-related matters should be reviewed periodically, and then advanced again with necessary modifications, by paying attention to changes in private investment and physical distribution in the region.



Priority area 1: Development of the Second East-West Corridor (along Asian Highway Route)

- (1) Development of Phnom Penh-Ho Chi Minh Road
- (2) Development of navigation at the Mekong delta
- (3) Improvement of road networks
- (4) Development of Cai Mep/ Thi Vai International Port

Priority area 2: Development of the North-South Growth Corridor in the Mekong region (along the Asian Highway Route 11)

- (1) Key area development at Savannakhet (Laos)
- (2) Development of Sihanoukville Port (Cambodia)

Priority area 3: Development of the Angkor Wat-Southern Laos Tourist Corridor

- (1) Development of key tourist area around Angkor Wat
- (2) Development of key tourist areas in southern Laos (Wat Phu, Khong Waterfalls)
- (3) Development of roads linking tourist areas and airports
- (4) Development of a tourism master plan

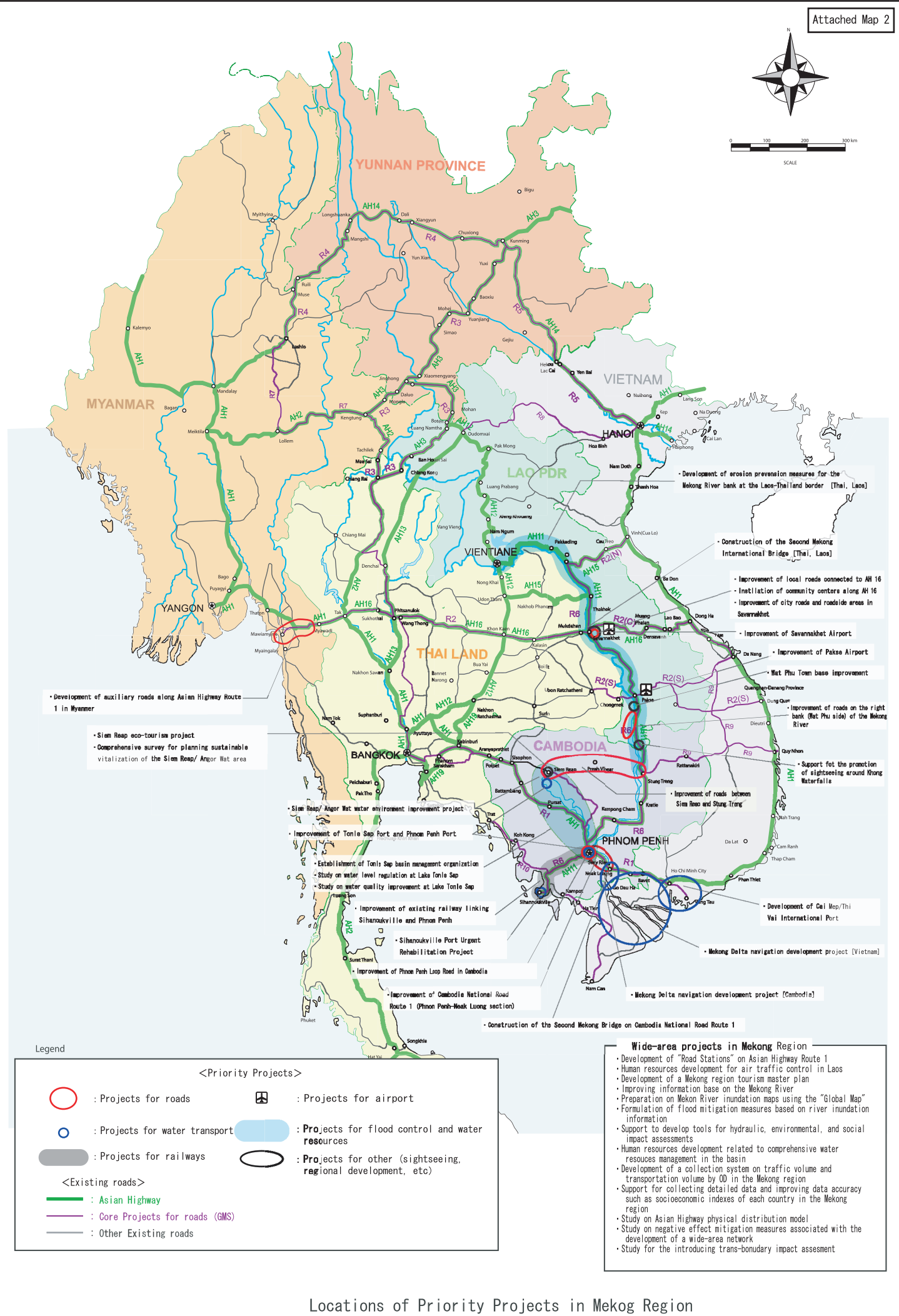
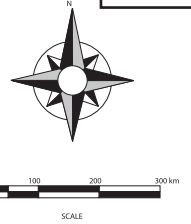
Priority area 4: Disaster prevention and Environmental management with the Mekong River as the Axis

- (1) Disaster prevention measures in the Mekong river basin, monitoring of the water environment
- (2) Sustainable development of Lake Tonle Sap
- (3) Human resources development related to comprehensive water resources management in the basin

Priority area 5: Support for introducing a data collection system, a Prediction model, and a Wide-area impact assessment method to Formulate a Master plan for mid-to long-term infrastructure development

- (1) Study for Introducing a data collection system of socioeconomic indexes etc.
- (2) Study for Introducing a prediction model and an evaluation method for the objective evaluation of each project
- (3) Study for Introducing a wide-area impact assessment method on Mekong region development

Locations of Priority Areas in Mekong Region



• Development of auxiliary roads along Asian Highway Route 1 in Myanmar

• Siam Reap eco-tourism project
• Comprehensive survey for planning sustainable vitalization of the Siam Reap/ Angkor Wat area

• Siam Reap/ Angkor Wat water environment improvement project

• Improvement of Tonle Sap Port and Phnom Penh Port

• Establishment of Tonle Sap basin management organization
• Study on water level regulation at Lake Tonle Sap
• Study on water quality improvement at Lake Tonle Sap

• Improvement of existing railway linking Siem Reap and Phnom Penh

• Siem Reap Port Urgent Rehabilitation Project

• Improvement of Phnom Penh Loop Road in Cambodia

• Improvement of Cambodia National Road Route 1 (Phnom Penh-Meak Luong section)

• Development of erosion prevention measures for the Mekong River bank at the Laos-Thailand border [Thai, Laos]

• Construction of the Second Mekong International Bridge [Thai, Laos]

• Improvement of local roads connected to AH 16
• Installation of community centers along AH 16
• Improvement of city roads and roadside areas in Savannakhet

• Improvement of Savannakhet Airport

• Improvement of Pakse Airport

• Wat Phu Town base improvement

• Improvement of roads on the right bank (Wat Phu side) of the Mekong River

• Support for the promotion of sightseeing around Krong Waterfalls

• Improvement of roads between Siam Reap and Stung Treng

• Support for the promotion of sightseeing around Krong Waterfalls

• Development of Cai Mep/Thi Vai International Port

• Mekong Delta navigation development project [Vietnam]

• Mekong Delta navigation development project [Cambodia]

• Construction of the Second Mekong Bridge on Cambodia National Road Route 1

Legend

<Priority Projects>

- : Projects for roads
- : Projects for water transport
- : Projects for railways
- : Projects for other (sightseeing, regional development, etc)
- ✈ : Projects for airport
- : Projects for flood control and water resources

<Existing roads>

- : Asian Highway
- : Core Projects for roads (GMS)
- : Other Existing roads

Wide-area projects in Mekong Region

- Development of "Road Stations" on Asian Highway Route 1
- Human resources development for air traffic control in Laos
- Development of a Mekong region tourism master plan
- Improving information base on the Mekong River
- Preparation on Mekong River inundation maps using the "Global Map"
- Formulation of flood mitigation measures based on river inundation information
- Support to develop tools for hydraulic, environmental, and social impact assessments
- Human resources development related to comprehensive water resources management in the basin
- Development of a collection system on traffic volume and transportation volume by OD in the Mekong region
- Support for collecting detailed data and improving data accuracy such as socioeconomic indexes of each country in the Mekong region
- Study on Asian Highway physical distribution model
- Study on negative effect mitigation measures associated with the development of a wide-area network
- Study for the introducing trans-boundary impact assessment

Locations of Priority Projects in Mekog Region