

## JBIC Provides FY2006 ODA Loan Package for India

### --Supporting Poverty Reduction, Economic Development and Environment Conservation in Country Having World's Largest Population in Poverty--

1. Japan Bank for International Cooperation (JBIC; Governor: Kyosuke Shinozawa) signed 11 ODA loan agreements on March 30, 2006 with the aggregate amount of up to 184.893 billion yen with the Government of India as an ODA loan package in FY2006. The amount of ODA loan package in this fiscal year increased by 18.9% from the previous year.
2. Since adopting the New Economic Policy in 1991, the Indian economy has achieved an average annual growth rate of 6%, with its GDP ranking the 10th largest in the world in 2004. Moreover, in recent years, the country has drawn attention as a BRIC member. Despite this progress, 35% of India's total population of 1.1 billion is still living on less than one dollar a day, making the country home to one-third of all the people living in poverty across the world. To accelerate poverty reduction, on which the government has placed top priority, the promotion of economic growth and the increasing of employment and income opportunities are necessary. However, inadequate infrastructure in such areas as power and transportation has posed a bottleneck to industrial development and economic growth. In addition, India is facing increasingly serious environmental problems, including air and water pollution and deteriorated urban living conditions caused by urbanization and deforestation. Given the extent of these problems, they may even have direct impacts on global environmental issues. In the 11th Five-Year Plan (April 2007-March 2012), the government aimed at equitable and sustainable growth, and to achieve this goal it has designated the following as priority development issues: not only alleviation of existing poverty but also long-term poverty alleviation through economic growth and environmental conservation to make these efforts sustainable.
3. India has been pushing forward strategic approaches by strengthening economic and trade ties with ASEAN member countries, the United States and other countries and by improving political and economic relations with neighboring China and Pakistan. This has brought about the increased presence of India in the international community. While Japan has traditionally enjoyed close historical, cultural and religious ties with India, Japan is now paying increasing attention to the country as one of the promising markets for trade and foreign investment. This is due to its recent emergence as a major IT power, as well as the existence of 300 million middle-income citizens, which is well over the entire population of ASEAN member countries. When Prime Minister Manmohan Singh made an official visit to Japan in December 2006, the two countries agreed to elevate bilateral relations to a Strategic and Global Partnership and signed a joint statement where concrete actions for its establishment were laid out. This is expected to usher in closer ties between Japan and India.
4. Given these developments, this year's ODA loan package will support economic infrastructure development, pro-poor rural development, and environmental improvement. The highlights of the package are as follows:

#### (1) Economic Infrastructure Development

In the power sector, JBIC will support "the Bangalore Distribution Upgradation Project" and "the Transmission System Modernization and Strengthening Project in Hyderabad Metropolitan Area." These projects aim to ensure stable supplies of power through upgrading and modernizing transmission and distribution networks. Bangalore, which is called the Silicon Valley of India, is a center of India's software industry where many foreign companies, including approximately 60 Japanese firms, have located their operations. However, since the city is plagued by frequent power outages, a distribution automation system will be put in place to bring early recovery from outages and effective utilization of distribution facilities by making use of the technology developed in Japan for detecting locations that caused power failures.

In the railroad sector, JBIC will support "the Delhi Mass Rapid Transport System Project Phase 2 (II)." The Project aims to reduce traffic congestion in the capital city of Delhi and relieve its air pollution, which is particularly serious even among major cities in the world, by constructing an urban rail system that includes an underground section. When rail service begins in the entire length of phase 2, 2.64 million passengers are projected to use the service every day, which exceeds the number of passengers in the Tokyo municipal subway. JBIC has already supported the first phase of the Delhi Mass Rapid Transport System Project, which was completed in November 2006.

In the port sector, JBIC will support the expansion of facilities for the port with the country's largest annual cargo-handling volume through "the Visakhapatnam Port Expansion Project." The Visakhapatnam Port is one of the key shipping ports for exporting iron ore produced in the Bailadila Mine, a major mine in India, one of the world's leading iron ore producing countries. As much as 30% of the iron ore which Japan imports is produced in this mine. Financial support for this project will thus lead to a stable and efficient import of iron ore to Japan.

#### (2) Pro-Poor Rural Development

In many parts of Andhra Pradesh located in southern India, agriculture depends on rainwater. Therefore, JBIC will support "the Andhra Pradesh Irrigation and Livelihood Improvement Project" whereby irrigation systems will be newly constructed or rehabilitated farming technology will be disseminated to increase agricultural productivity. Since the northern area of Andhra Pradesh targeted by the Project has a high incidence of poverty, it is expected that a boost in agricultural productivity will lead to poverty reduction.

In the northeastern state of Tripura and the western state of Gujarat, forest degradation has greatly progressed, as poor people are increasingly engaging in slash-and-burn and shifting cultivation, and harvesting excessive forest resources for fodder and fuels. JBIC will therefore support "the Tripura Forest Environmental Improvement and Poverty Alleviation Project" and "the Gujarat Forestry Development Project Phase 2." In these Projects, afforestation activities through community participation will be conducted to rehabilitate forests that are indispensable for forest dependents' livelihoods. Small-scale infrastructure development and micro enterprise will also improve living standards of local populations depending on forests for their livelihoods. Since Tripura is bordered with the Indo-Burma region, an area designated as one of the 34 biodiversity hot spots[1] by Conservation International, an international NGO, efforts will be made to preserve biodiversity, including a biodiversity study, eco-tourism development and enhanced community reserve management.

#### (3) Environmental Improvement

In India, the capacity of water supply infrastructure is lagging behind fast-rising demand for water induced by rapid population growth and economic development. JBIC will thus support "the Kerala Water Supply Project (II)" and "the Agra Water Supply Project" whereby water supply facilities will be developed and the operations of water supply services will be improved. In "the Agra Water Supply Project," the water drawn from an irrigation canal of the Ganges River and will be supplied to Agra, where Taj Mahal, a World Heritage site, is located, and its neighboring areas. The project is thus expected to improve hygiene for the citizens, including the poor, and benefit a large number of tourists visiting the city.

In the sewerage sector, the development of sewerage facilities is not keeping up with rapid inflows of population to urban areas and industrialization. As a result, large volumes of wastewater, which far exceed the treatment capacity of sewerage systems and the natural capacity of rivers to purify water, are discharged into rivers untreated. There is thus a serious degradation of the quality of river water, as well as deterioration of the living conditions in urban areas. JBIC will support "the Amritsar Sewerage Project" and "the Orissa Integrated Sanitation Improvement Project" whereby sewerage systems will be developed and reliable sewage treatment service will be provided to improve hygiene and the living conditions for local residents. These projects are also expected to benefit the urban poor through installation of sanitation facilities, such as community toilets in slums.

#### (4) Promoting Knowledge Assistance

To increase the sustainability of project effectiveness, JBIC will provide various forms of knowledge assistance in implementing the above projects.

In "the Delhi Mass Rapid Transport System Project Phase 2 (II)" and "the Visakhapatnam Port Expansion Project," HIV prevention programs will be implemented, including an awareness campaign for migrant workers to reduce the risk of contracting HIV/AIDS.

In "the Bangalore Distribution Upgradation Project" and "the Transmission System Modernization and Strengthening Project in Hyderabad Metropolitan Area," total quality management (TQM), with a bottom-up approach to sharing and achieving common quality control targets in the entire organization, will be introduced to support the capacity building of the execution agencies.

In "the Kerala Water Supply Project (II)," "the Agra Water Supply Project," "Amritsar Sewerage Project" and "the Orissa Integrated Sanitation Improvement Project," a number of efforts will be made toward overall improvement in utility operations, including rehabilitation of the water distribution network and creation of a leakage detection team to reduce water leakages; proper asset management; and installation of meters and introducing diverse payment schemes to increase the collection of water and sewerage fees.

In "the Andhra Pradesh Irrigation and Livelihood Improvement Project," formation of water user associations, which used to be set up after building irrigation facilities, will be formed prior to construction to increase community ownership and promote participatory operation and maintenance of irrigation facilities. In addition, training will be provided for the staff of the state irrigation department and water user associations across the state in partnership with NGOs and multilateral institutions.

During the preparation stage of "the Gujarat Forestry Development Project Phase 2," a seminar was held in the State of Gujarat, in partnership with Ryukyu University and experts from Okinawa Prefecture who have expertise in order to increase the impact of afforestation and conservation of mangrove forests. In the seminar, Japan's experience and knowledge on mangrove forest preservation and eco-tourism were presented to the Indian participants.

([Click here for details.](#))

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[1] Biodiversity hot spots designated by Conservation International cover just 2.3% of the earth's surface but provide a habitat for 75% of the planet's most threatened mammals, birds and amphibians.

## Loan Amounts and Terms

| Project Name   | Amount (Mil. Yen) | Interest Rate (% per annum) | Repayment Period/ Grace Period (years) | Procurement    |
|--|-------------------|-----------------------------|--|----------------|
| Bangalore Distribution Upgradation Project   | 10,643            | 0.75                        | 15/5                                   | General Untied |
| Transmission System Modernization and Strengthening Project in Hyderabad Metropolitan Area | 23,697            | 1.3                         | 30/10                                  |                |
| Delhi Mass Rapid Transport System Project Phase 2 (II)                                     | 13,583            | 1.3                         | 30/10                                  |                |
| Visakhapatnam Port Expansion Project   | 4,129             | 0.75                        | 15/5                                   |                |
| Andhra Pradesh Irrigation and Livelihood Improvement Project                               | 23,974            | 1.3                         | 30/10                                  |                |
| Tripura Forest Environmental Improvement and Poverty Alleviation Project                   | 7,725             | 0.75*                       | 40/10*                                 |                |
| Gujarat Forestry Development Project Phase 2   | 17,521            | 0.75*                       | 40/10*                                 |                |
| Kerala Water Supply Project (II)   | 32,777            | 1.3                         | 30/10                                  |                |
| Agra Water Supply Project  | 24,822            | 1.3                         | 30/10                                  |                |
| Amritsar Sewerage Project  | 6,961             | 0.75*                       | 40/10*                                 |                |
| Orissa Integrated Sanitation Improvement Project   | 19,061            | 0.75*                       | 40/10*                                 |                |
| Total  | 184,893           |                             |  |                |

To help the developing countries to address environmental issues, JBIC applies lower-than-ordinary interest rates to environmental projects.

## (1) Bangalore Distribution Upgradation Project

## (a) Project Background and Necessity

Bangalore, with a population of about 6 million, is the state capital of the southern Indian state of Karnataka. Known as the "Silicon Valley of India," it is the center of India's software industry, and is also a leading Indian industrial center where a large number of foreign companies are concentrated, including about 60 Japanese-affiliated companies. Meanwhile, looking at the state of power supply for the Bangalore metropolitan area, which includes the city of Bangalore, frequent power outages (averaging at least one and a half hours per week) create a bottleneck for economic activity and the improvement of living standards.

## (b) Project Objectives and Outline

The project aims to contribute to economic development and improved living standards in the region through the stabilization of power supply by establishing a distribution automation system (DAS) over the entire metropolitan area (about 1600km<sup>2</sup>), including the city of Bangalore. The DAS automatically locates and isolates the power outage fault location when a fault in the power distribution facilities occurs, automatically restoring power to areas that adjoin the fault location. As a result, a significant reduction in the time for restoration of power from a power outage and effective use of distribution facilities can be expected. The project will use technology developed in Japan for the detection of power outage locations as a major component of the DAS to be introduced.

Furthermore, the project will carry out surveys to compile the opinions of consumers in collaboration with the US Agency for International Development (USAID), which is conducting an assistance program for distribution projects in India, as well as with local NGOs, in an effort to help further improve service delivery by the project executing agency.

The proceeds of the loan will be used for the procurement of the DAS and related equipment, and consulting services.

## Project Executing Agency

Bangalore Electricity Supply Company Limited (BESCOM)  
Address: K R Circle, Bangalore 560 001, Karnataka, India  
Tel: +91-80-2208-5402  
Fax: +91-80-2235-4928

## (2) Transmission System Modernization and Strengthening Project in Hyderabad Metropolitan Area

## (a) Project Background and Necessity

Demand for power is rising sharply in India with rapid economic development, and the resolution of constant power shortages and a stable power supply are urgent issues for the country's further economic development and the reduction of poverty.

In recent years, there has been a marked concentration of high-tech and other industries in Hyderabad, which is the state capital of the southern Indian state of Andhra Pradesh and has a population of about 6 million. Due to the increase in the number of office buildings and factories and the growth in the population, demand for power has risen by an annual average of 7% since 2001, and is forecast to rise by an annual average of 11% over the next five years. An increase in power supply capacity in the state is being promoted rapidly through the construction of power plants, and upgrading the capacity of the transmission network for the city and the neighboring area is an urgent task in order to supply the sharply rising amount of power being generated to consumers in a stable manner.

## (b) Project Objectives and Outline

The project aims to contribute to the economic development of the region and an improvement in living standards through the upgrading of power supply capacity by establishing a high voltage transmission network in the city of Hyderabad and the neighboring area. With the implementation of the project, the processing capacity of substations within the target area is planned to increase by about 40%. Moreover, a decline in transmission loss rates and a decrease in the number of power outages are also expected.

The proceeds of the loan will be used for the procurement of equipment for transmission lines and substation, civil engineering, and consulting services.

## Project Executing Agency

Transmission Corporation of Andhra Pradesh (AP Transco)  
Address: Vidyut Soudha, Khairatabad, Hyderabad 500 082, Andhra Pradesh, India  
Tel: +91-40-2331-7650  
Fax: +91-40-2339-6023

## (3) Delhi Mass Rapid Transport System Project Phase 2 (II)

## (a) Project Background and Necessity

In recent years sharp population growth in major Indian cities coupled with the rapid spread of private car ownership has given rise to serious urban traffic congestion as well as the exacerbation of environmental problems caused by vehicle emissions.

As the population in the capital city of Delhi has doubled over the past two decades to about 14 million, there has also been a rapid spread of private cars, and the number of registered vehicles has surged from 0.52 million in 1980 to 4.17 million in 2004. Neither short-distance railroads connecting suburbs to the city center nor an intra-city rail network have been developed in Delhi. Thus, the citizens have to rely on buses and private vehicles for transport (Note 1). This has given rise to chronic traffic congestion in Delhi,

slowing the average speed of motor vehicles in the city to 13km/hr. Furthermore, private vehicles and buses use low quality fuel and outmoded engines, which has made air pollution a serious problem (Note 2).

Under these circumstances, there is a need to construct a mass rapid transport system which will relieve traffic congestion as well as reduce air pollution and other environmental problems caused by vehicle emissions.

#### (b) Project Objectives and Outline

The project aims to promote economic activity as well as improve the urban environment through the reduction of traffic congestion and vehicle emissions in the capital territory of Delhi by constructing a subway, at-grade and elevated rail system with a total length of 245km. The first phase of the project, comprised of three lines spanning a total of about 59km, was completed in November 2006. This loan is for the second phase of the project, comprised of five lines (of which three are extensions of existing lines) extending a total of about 54km. In addition to the access to the Red Fort already enabled by the first phase, access to the Qutub Minar, a registered World Heritage Site, will be provided by the project, so it is also expected to promote tourism.

Furthermore, in the first phase, at construction sites where the use of safety helmets and safety footwear had not been established as a practice in India, each worker was required to wear a safety helmet and footwear, helping to spread an awareness of safety and efficiency, including conscious efforts to implement strict organization and neatness. The first phase of the project is said to have brought about a cultural revolution in construction work in India, and similar measures will be taken in the second phase as well.

The proceeds of the loan will be used for civil engineering in the construction of the subway, procurement of rolling stock, and consulting services.

#### Project Executing Agency

Delhi Metro Rail Corporation Limited (DMRC)

Address: 3rd Floor, East Tower, N.B.C.C. Place, Bishma Pitahmah Marg, Pragati Vihar, New Delhi 110003, India

Tel: +91-11-2436-5202

Fax: +91-11-2436-5370

Note 1: As of 2001, while buses, private cars and rail accounted for 60.0%, 39.5%, and 0.5% respectively of commuting travel in Delhi.

Note 2: Delhi has the world's highest average annual atmospheric concentration of suspended particulate matter among major cities, significantly exceeding Beijing and Bangkok.

### (4) Visakhapatnam Port Expansion Project

#### (a) Project Background and Necessity

Marine transport plays an essential role in international trade and domestic transportation in India. The cargo volume handled at Indian ports has seen a rapid growth in recent years, rising from 280 million tons in FY 2000 to 380 million tons in FY 2004 due to the country's open-door policy.

Visakhapatnam Port, one of the country's 13 major ports, is located in the southern Indian state of Andhra Pradesh and has handled the largest volume of cargo (about 55.80 million tons) for six consecutive years. Of this cargo, about 30% consists of iron ore (about 16 million tons). India is the 3rd largest iron ore exporter, and it is the 3rd biggest source of iron ore imports for Japan. Visakhapatnam Port is one of the key shipping ports for exporting high-grade iron ore produced at Bailadila Mine. There are particularly strong ties with Japan, partly because the mine and the outer harbor of the port were developed using a Japanese ODA loan in the 1970s, and the fact that Japan imports about 30% of the iron ore produced at the mine. The volume of iron ore handled by the outer harbor of the port is projected to increase from the current 13.7 million tons to 15.7 million tons in 2012. However, there is marked deterioration in cargo handling equipment, and there are concerns about a decline in export capacity due to frequent occurrence of equipment failure. Moreover, currently only 150,000 ton class shipping is able to enter the port. Amidst a global trend toward larger ships, the expansion of the port is needed as Japanese industrial world also has high expectations for it to accommodate larger ships in the 200,000 ton class.

#### (b) Project Objectives and Outline

The project aims to increase export capacity and improve the transport efficiency of Visakhapatnam Port by consolidating the ground used as an iron ore stockpiling site, dredging waterways and berths, and strengthening mooring facilities, thereby contributing to the economic development of the country through increased exports of iron ore.

The proceeds of the loan will be used for civil and marine engineering, the procurement of equipment, electrical work, and consulting services. An ODA loan in FY 2005 for the project was used for the study and design phases.

#### Project Executing Agency

Visakhapatnam Port Trust (VPT)

Address: Visakhapatnam -530035, Andhra Pradesh, India

Tel: +91-891-2876001

Fax: +91-891-2565023

### (5) Andhra Pradesh Irrigation and Livelihood Improvement Project

#### (a) Project Background and Necessity

Agriculture plays an important role in the Indian economy, with agricultural production accounting for about 20% of GDP, and approximately 60% of the working population being employed in the agricultural sector. Enhancement of agricultural productivity is required in order to increase the food supply in response to population growth and to reduce rural poverty. Water resource management and efficient utilization of water is essential because rainfall in India is concentrated in the few months of the rainy season. Therefore, establishment of irrigation facilities to use the limited water resources effectively and to ensure water for agriculture has been listed as one of the priority issues for the Indian government.

Agriculture is important in the state of Andhra Pradesh (population of 75.7 million in 2001), which is located in southern India with agricultural land accounting for 38% of the state's area and 65% of the working population being employed in agriculture. However, more than half a century has passed since the majority of the irrigation facilities were built, and stable agricultural production is difficult because water does not reach tail-end of the facilities due to damage to watercourses and silting up as a result of deterioration and inadequate operation and maintenance. Moreover, irrigation facilities were developed in the past with a focus on the construction of large-scale facilities, so areas that are not suited to large-scale development have been put in the position of having to carry out rain-fed agriculture. As a result, suicide among farmers due to intensifying drought damage has become a social problem. Under these circumstances, rehabilitation of existing irrigation facilities that have been deteriorated, construction of new irrigation facilities in areas of rain-fed agriculture, and strengthening of operation and maintenance systems are important issues.

#### (b) Project Objectives and Outline

The project aims to increase agricultural productivity and improve water management through rehabilitation of existing irrigation facilities, construction of new irrigation facilities in rain-fed area and strengthening of operation and maintenance setup, thereby increasing agriculture income. Moreover, it will also spread agricultural technology and provide information on market conditions for agricultural products in order to raise agricultural incomes. New irrigation facilities will be constructed primarily in the northern regions of the state where the poverty ratio is high in efforts to alleviating poverty through an expansion in agricultural production based on a stable water supply.

The state of Andhra Pradesh has transferred operation and maintenance of irrigation facilities to water users associations under Andhra Pradesh Farmers' Management of Irrigation Systems Act formulated in 1997, and the state has been actively working to achieve participatory irrigation management. However, many of the water users associations have not received adequate training in participatory water management, lack knowledge about operation and maintenance, and are unable to carry out fair distribution of water and proper maintenance. Therefore, the project will form water users associations, which were previously formed after construction of irrigation facilities, before commencement of construction works to increase farmers' ownership as well as carrying out training for staffs of the Irrigation and Command Area Development Department and water users associations state-wide in conjunction with NGOs and international organizations in order to promote participatory irrigation management across the state. It is hoped that such efforts in Andhra Pradesh, which is working actively to achieve participatory water management, will form a model for other states.

The proceeds of the loan will be used for civil engineering for irrigation facilities, and consulting services.

#### Project Executing Agency

Irrigation and Command Area Development Department

Address: Jalasoudha Building, Erramanzil, Hyderabad 500 082, Andhra Pradesh, India

Tel: +91-40-2330-5894

Fax: +91-40-2330-5951

## (6) Tripura Forest Environmental Improvement and Poverty Alleviation Project

### (a) Project Background and Necessity

India's forest cover ratio is approximately 24%, lower than the world average of around 30%. On top of this, population growth and a steep increase in demand for timber are causing further deforestation, resulting in the deterioration of forests and their soil and water conservation function. This is putting pressure on the lives of the poor, who rely on forests for obtaining items such as fodder, fuel wood, and cash-earning fruits. The situation is creating a vicious cycle of accelerating growth in the burden on the forests.

Approximately 83% of the population of the state of Tripura, located in northeastern India and with a total area of 10,499 km<sup>2</sup>, live in mountainous or hilly terrain, and above all, more than half the indigenous ethnic groups called scheduled tribes, which makes up 31% of the state's population, live mostly in dependence on the forest. The poverty rate among the population of mountainous or hilly areas is an extremely high 40%, and the over-harvesting of forest resources by this poor stratum of the population and slash-and-burn agriculture are producing striking deterioration of the forests. Between 1989 and 2003, dense forest shrank by about 509 km<sup>2</sup>, and burnt areas expanded by about 137 km<sup>2</sup>. These circumstances make it necessary to restore degraded forests and improve the standard of living of the impoverished.

### (b) Project Objectives and Outline

This project calls for the afforestation of approximately 55,000 hectares (about one quarter the area of Tokyo) in Tripura's seven forest districts and three wildlife sanctuaries, with the participation of the residents of the area. Together with this, efforts will be made to improve the environment and alleviate poverty in the region through measures to improve incomes among the population.

This project employs the "people's participatory forest management" model. Approximately 400 forest management committees will be formed among the residents of the villages near the forests. With the cooperation of Indian NGOs possessing detailed information on each area, microplans for afforestation will be formulated primarily by local residents, with a view to efficient forest management.

To achieve sustainable reforestation, it is necessary to secure alternate sources of income for the impoverished people in the areas neighboring the forests, whose deforestation and slash-and-burn methods are likely to destroy the seedlings planted through afforestation programs, as well as to promote higher standards of living through self-improvement efforts. Accordingly, this project will provide support for small-scale infrastructure construction projects proposed by the forest management committees, and will provide the necessary knowledge and technological guidance for the formulation of self-support groups and institution and expansion of small-scale projects that will create income for the local residents.

The proceeds of the loan will be used for afforestation activities, income improvement activities, and consulting services.

#### Project Executing Agency

Forest Department, State Government of Tripura

Address: Aranya Bhawan, Nehru Nagar, Kunjban, Agartala 799 006, Tripura, India

Tel: +91-381-2325616

Fax: +91-381-2225253

## (7) Gujarat Forestry Development Project Phase 2

### (a) Project Background and Necessity

India's forest cover ratio is approximately 24%, lower than the world average of around 30%. On top of this, population growth and a steep increase in demand for timber are causing further deforestation, resulting in the deterioration of forests and their soil and water conservation function. This is putting pressure on the lives of the poor, who rely on forests for obtaining items such as fodder, fuel woods, and cash-earning fruits. The situation is creating a vicious cycle of accelerating growth in the burden on the forests.

The state of Gujarat, located in western India, is about half as large as Japan (approximately 196,000 km<sup>2</sup>). In 1995, approximately 520,000 of Gujarat's 1.23 million hectares of forest were in a state of deterioration. JBIC funded Gujarat Forestry Development Project (signed in January 1996, 15.76 billion yen), which has implemented the reforestation of approximately 260,000 hectares. Still, the state's forest and tree cover ratio remains at 13.0%, far below India's national average of 23.7%. The poverty rate in eastern hilly area of the state is particularly high, and because the indigenous population who make up the majority of the impoverished live mostly in dependence on the forest, the deterioration of the forests is advancing as a result of overgrazing and over-harvesting of forest resources. As a result, soil erosion and the decline in water retention capability are worsening. Further, while Gujarat has mangrove forests second in India only to West Bengal, approximately 79% (76,000 hectares) is degraded. Because mangrove forests prevent the destruction of coastline by natural disasters, their preservation is an important issue.

### (b) Project Objectives and Outline

This project calls for afforestation of approximately 146,000 hectares in Gujarat's 14 forest divisions, ten social forestry divisions, and one wildlife division, with people's participation of the area. Together with this, efforts will be made to improve the environment and alleviate poverty in the region through measures to improve incomes among the population.

Like the Tripura Forest Environmental Improvement and Poverty Alleviation Project, this project employs the "people's participatory forest management" model, and forest management committees will be formed among the residents of the villages near the forests. With the cooperation of Indian NGOs possessing detailed information on each area, microplans for afforestation will be formulated primarily by local residents, with a view to efficient forest management. Approximately 210 eco-development committees will be established to preserve biodiversity by protecting and improving the habitat of rare flora and fauna, and microplan for the conservation will be prepared.

The proceeds of the loan will be used for afforestation activities, income improvement activities, and consulting services.

#### Project Executing Agency

Forest Department, Government of Gujarat

Address: Block No. 14, Dr. Jivraj Mehta Bhavan, Old Sachivalaya, Gandhinagar, Gujarat, India

Tel: +91-79-232-53903

Fax: +91-79-232-54106

## (8) Kerala Water Supply Project (II)

### (a) Project Background and Necessity

Because access to safe drinking water is essential to health and hygiene, the Government of India has, after the country became independent, worked to extend its potable-water supply system to every corner of India. As of 2002, India's water supply ratio was 86%. However, the development of potable water facilities has failed to keep pace because of the growing demand for water resulting from the rapid growth in population and high pace of economic development. The development of sufficient capacity to meet this high and growing demand for safe and stable water supply is an important issue to improve the living standard in India.

The state of Kerala is in the south of India. It has a population of 31.84 million, and, as of 2006, a water supply ratio is 65%. This is well below India's national average and it is one of the states with the lowest ratios, together with northeast states. In the two major cities in the state targeted by the project, the expansion of water supply system has not kept pace with the growth of the population that resulted from urbanization, and the undersupply of potable water has become serious. Three regional cities are suffering not only from a shortage of potable water, but also from salinization of the groundwater which local residents depend on. Accordingly, the development of surface water supply system for these regions is critical.

### (b) Project Objectives and Outline

This project targets urban areas in Kerala where the undersupply of potable water is serious due to population growth, and regional cities where the water shortage is compounded by degradation of water quality due to salinization. The project's objective is to meet growing demand for potable water through the construction of facilities that will deliver stable water supply. It is anticipated that this project will improve living conditions for approximately 3.4 million local residents (as of 2006). JBIC has committed ODA loans to this project in the amount of 11,997 million yen (FY 1996).

The proceeds of the loan will be used for civil engineering for the construction of water supply system, procurement of machinery and materials, and consulting services.

#### Project Executing Agency

Kerala Water Authority

Address: "Jala Bhavan" Vellayambalam, Thiruvananthapuram-695033, Kerala, India

Tel: +91-0471-328654

Fax: +91-0471-324903

#### (9) Agra Water Supply Project

##### (a) Project Background and Necessity

In India, development of water resources and water supply facilities has not been able to keep up with the rapidly increasing demand for water that has resulted from population increase and industrialization. Even in the national capital of Delhi, water is only supplied for 3.5 hours per day.

The current water supply system in the city of Agra in the state of Uttar Pradesh in Northern India and the surrounding areas (cities of Mathura and Vrindavan) uses water from Yamuna River, which has been contaminated by waste water from industrial cities in the state of Haryana and Delhi, located in the upstream areas of the river. Because large quantities of chlorine are used to purify the low-quality water of Yamuna River, the water smells of chlorine and may contain the carcinogenic substance trihalomethane. As it is not suitable for drinking, people must rely on ground water or bottled water for drinking. Even these alternatives pose problems in terms of providing a safe water supply, as there are concerns about fluorine in the groundwater, and the poorest people cannot afford bottled water. In addition, water is only supplied for three to four hours a day, and the volume of water in Yamuna River cannot keep up with the needs of the continuously growing population. Given these circumstances, there is an urgent need for providing a safe, reliable supply of water through development of water supply facilities.

##### (b) Project Objectives and Outline

The purpose of the project is to ensure a safe, reliable supply of water by channeling water from Upper Ganga Canal, which is supplied by Ganges River, as well as by constructing water supply facilities for Agra and its surrounding areas, and rehabilitating and expanding existing water supply facilities in Agra. Because clean water from Ganges River can be used as potable water, this project is expected to improve hygienic environment for the citizens of Agra, including its poorest residents. The project is also expected to benefit many tourists that visit Agra to see Taj Mahal, a World Heritage Site. This project will provide house connection assistance for those who live in slums and will expand the availability of water supply services to the poor. It will also implement awareness campaign to enhance residents' understanding of water conservation and tariff payments in cooperation with local NGOs.

The proceeds of the loan will be used for civil engineering for the construction of water supply facilities, procurement of machinery and materials, and consulting services.

##### Project Executing Agency

Uttar Pradesh Jal Nigam

Address: 6, Rana Pratap Marg, Lucknow, 226001, Uttar Pradesh, India

Tel: +91-522-2620172

Fax: +91-522-2620173

#### (10) Amritsar Sewerage Project

##### (a) Project Background and Necessity

Because sewerage improvements in India are not keeping up with surging urban populations and industrialization, wastewater that clearly exceeds the natural purification capacity is being discharged into the rivers. Because of this, local residents are suffering from health problems caused by contaminated water, such as diarrhea and hepatitis.

Amritsar is a key city in the state of Punjab in the northeastern part of India that borders Pakistan. The city is located about 30 km from the India-Pakistan border. Since efforts to develop the sewerage network have not kept pace with the city's increasing population (which has grown from 590,000 in 1981 to 980,000 in 2001), the degradation of the sanitary conditions caused by the expulsion of residential wastewater is accelerating. Also, because there is no sewerage treatment plant in the city, all of the wastewater is discharged, untreated, into the rivers. From there it flows into Pakistan and causes water contamination across the border. Today, the level of contamination of untreated wastewater that is discharged into surrounding rivers is about five times India's domestic wastewater discharging standard. Given these conditions, there is an urgent need to develop the sewerage facilities so as to improve sanitary conditions in Amritsar.

##### (b) Project Objectives and Outline

This project will help expand reliable sewerage services and will contribute to the improvement of sanitary conditions and living environment of local residents by constructing sewerage facilities in Amritsar, Punjab. Because the city is also a sacred site for Sikhs, this project is expected to benefit many pilgrims and visitors as well as local residents. In addition to improving sewerage facilities, this project will incorporate public awareness activities aimed at promoting the active participation of citizens in improving the hygienic conditions through support for local NGOs. As a countermeasure against urban poverty, it will also provide support for water system connectivity, the installation of toilets in slums, and the expansion and improvement of community-based solid waste self-management.

The proceeds of the loan will be used for civil engineering for the construction of sewerage facilities, procurement of machinery and materials, and consulting services.

##### Project Executing Agency

Punjab Water Supply and Sewerage Board (PWSSB)

Address: 1-B, Sector 27-A, Madhya Marg, Chandigarh, 160 019, Punjab, India

Tel: +91-172-2656526

Fax: +91-172-2656526

#### (11) Orissa Integrated Sanitation Improvement Project

##### (a) Project Background and Necessity

Located along the coast of the Bay of Bengal in the eastern part of India, the state of Orissa has the highest rate of poverty in all of India. On the other hand, it enjoys such natural resources as iron ore and coal, and in recent years has seen the construction of new iron mills and electrical power plants. In the state capital of Bhubaneswar and the commercial center of Cuttack, sewerage improvements have not been able to keep up with the escalating urban population (the total population of both cities has risen from 510,000 in 1981 to 1.13 million in 2001).

In Bhubaneswar, only a mere 1% of the sewerage is treated. The vast majority of the wastewater produced in the city is discharged untreated into the rivers through the city's drainage channels, causing severe water contamination. This, in turn, has a negative impact on the sanitary conditions and living environment of local residents. Cuttack faces similar problems. Rivers are growing more contaminated and the sanitary conditions and living environment of local residents are deteriorating. The contamination level of the water discharged into the rivers is four times India's domestic wastewater discharging standard. In addition, Cuttack is located between two rivers. Because the city lacks adequate drainage capabilities, the lowlands experience frequent flooding when the river levels rise during the rainy season. When flooding occurs, the wastewater that flows through the drainage channels inundates the cities, causing serious sanitation hazards. Given these conditions, there is an urgent need to develop the sewerage system and rainwater drainage facilities so as to improve sanitary conditions.

##### (b) Project Objectives and Outline

This project is intended to provide reliable sewerage services and to improve rainwater drainage, thereby improving the sanitary conditions and living environment of local residents, including the poor, by constructing sewerage facilities and rainwater drainage facilities in the eastern Indian cities of Bhubaneswar, the state capital, and Cuttack in the state of Orissa.

The operation and maintenance work of the water supply and sewerage services, including the sewerage facilities that will be constructed under this project, are to be transferred from the Public Health Engineering Organization to Bhubaneswar Municipal Corporation and Cuttack Municipal Corporation until the project completion. Thus, an action plan for the devolution is being enacted with the support of the US Agency for International Development (USAID). The consultants hired under this project will develop a detailed plan based on that action plan, and will support the process of devolution in cooperation with USAID.

Since this project is also being conducted in the slums of these two cities, it incorporates efforts to work with local NGOs on the preparation of an implementation plan that reflects the needs of slum residents, and includes the installation of sanitation facilities, such as toilets and solid waste collection sites.

The proceeds of the loan will be used for civil engineering for the construction of sewerage facilities and rainwater drainage facilities, procurement of machinery and materials, and consulting services.

##### Project Executing Agency

Orissa Water Supply and Sewerage Board (OWSSB)

Address: Satya Nagar, Bhubaneswar-7, Orissa, India

Tel: +91-674-2571185

Fax: +91-674-2571348