

## JBIC Provides Fiscal 2005 ODA Loan Package for India

### --Supporting Poverty Reduction, Economic Development, and Environmental Conservation in India, the Country with the World's Largest Impoverished Population--

1. Japan Bank for International Cooperation (JBIC; Governor: Kyosuke Shinozawa) signed 10 ODA loan agreements on 31 March, 2006 in the aggregate amount of up to 155.458 billion yen, consisting of nine loan agreements totaling up to 134.829 billion yen with the Government of India, and one loan agreement totaling up to 20.629 billion yen with the Rural Electrification Corporation that is guaranteed by the Government of India. As a result, the amount of this year's ODA loan package has increased by 15.6% from the previous fiscal year.
2. From among India's total population of some 1.1 billion, 35% are living on less than one dollar a day. The country is thus home to one third of all the people living in poverty in 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, underdeveloped infrastructure such as power, transportation, irrigation, and water supply and sewerage has impeded efforts to promote industries and to develop the economy. In the meantime, environmental problems are worsening in India, including deforestation, contaminated river water, and air pollution caused by urbanization. Given their large size, these problems may have direct impacts on global environmental issues. In the 10th Five-Year Plan (April 2002-March 2007), the Government of India stressed 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 its strategic approach by strengthening economic and trade ties with ASEAN members, the United States, and others, and by improving political and economic relations with neighboring China and Pakistan in order to thereby increase its presence in the international community. While Japan has traditionally enjoyed close ties with India in terms of history, culture, and religion, Japan is now paying increasing attention to India as one of the promising markets for trade and foreign investment in the coming years. This is due to the recent emergence of the country as a major IT power, as well as its 300 million middle-income citizens, which is well over the population of ASEAN as a whole. "Japanese Manufacture's Overseas Business Operation 2005", an annual survey conducted by JBIC, indicates that India has been gaining significance as "a promising destination for investments over the medium-term." Results of the JBIC FY2005 Survey rated India the 2nd most promising country after China. Further strengthening of diplomatic relations between India and Japan is expected, as shown by the agreement from April 2005 between Japanese Prime Minister Koizumi and Indian Prime Minister Manmohan Singh for strengthening the Japan-India global partnership.
4. Given this situation, this year's ODA loan package will support economic infrastructure development, regional development benefiting the poor, and environmental improvement. The highlights of this year's ODA loan package for India are as follows:

#### (1) Economic Infrastructure Development

In the capital city of Delhi and in Bangalore, which is called the Silicon Valley of India and in which development is progressing rapidly, the JBIC-supported "Delhi Mass Rapid Transport System Project (Phase 2) (I)" and "Bangalore Metro Rail Project" aim to reduce traffic congestion and relieve air pollution that is particularly serious by constructing an urban rail system that includes a subway section. When respective rail service begins in the entire length, 2.59 million riders per day are projected in Delhi, which exceeds the number of riders and 1.07 million riders per day are projected in Bangalore. JBIC has already supported the first phase of "the Delhi Mass Rapid Transport System Project", under which the 59km rail transport system has almost been completed.

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 (E/S)". The Visakhapatnam Port is one of the key shipping ports for exporting iron ore produced at the Bailadila Mine, a major mine in one of the world's leading iron ore producing countries. Japan imports as much as 30% of the iron ore produced in this mine. Financial support for this project will thus lead to a stable and efficient import of iron ore for Japan. The Bailadila Mine and its outer port were developed in the 1970s with financing provided by ODA loans.

In the water supply and sewerage sector, JBIC will support "the Bangalore Water Supply and Sewerage Project (II-2)", which consists of the expansion of water supply and sewerage facilities in the Bangalore metropolitan area, comprehensive improvement of water business management, and development of a water supply and sewerage system in the slums, thereby helping to boost industrial activity and poverty alleviation. Since about 60 Japanese companies are operating in this area, including a factory belonging to Japan's largest automobile manufacturer, the project will benefit these Japanese and other companies.

In the power sector, JBIC will support "the Purulia Pumped Storage Project (III)". Through this project a pumped storage power plant with a capacity of 900 MW (225 MW 4 generating units) will be built to relieve power shortages in the eastern state of West Bengal, which is affected by significant power shortages. The project also includes efforts to improve the operation and management system, including total quality management (TQM), based on Japanese experience.

#### (2) Regional Development Benefiting the Poor

India's rural areas are home to 70% of the nation's population and 80% of those people living in poverty. Thus extensive rural electrification will serve to reduce poverty and boost economic activity. For this reason, the Government of India has designated household electrification as one of the priorities in its agenda. Against this background, JBIC will support "the Rural Electrification Project". Through this project power distribution networks will be developed in the southern state of Andhra Pradesh, the western state of Madhya Pradesh, and Maharashtra to improve the access to electricity for the households yet to be electrified and thereby reduce disparities between rural and urban areas. The project will help supply electricity to 2.79 million households and benefit as many as 15 million people.

JBIC will support "the Swan River Integrated Watershed Management Project", a project for integrated watershed management in the Swan River at the foot of the Himalayan Mountains which includes afforestation, construction of erosion control check dams and flood control embankments, and improvements in terraced fields. The project will serve to raise the standard of living of local residents, including those people living in poverty, through stable and increased production of agricultural and forest products. As a model of integrated watershed management project in the low mountainous area, this project is expected to be scaled up in similar land areas.

#### (3) Environmental Improvement

JBIC will support efforts to improve the public health environment in three out of the six major cities in India through "the Bangalore Water Supply and Sewerage Project (II-2)", "the Hussain Sagar Lake and Catchment Area Improvement Project", and "the Kolkata Solid Waste Management Improvement Project". In the case of "the Hussain Sagar Lake and Catchment Area Improvement Project", due to serious water pollution in Hussain Sagar Lake, the symbol of central Hyderabad in South India, sewerage facilities will be developed, the use of recycled water and treated wastewater will be promoted, and other measures to improve the water quality in the lake will be carried out. "The Kolkata Solid Waste Management Improvement Project" consists of developing the sanitary landfill with measures to prevent the scattering of municipal solid waste, bad odors, and groundwater pollution. It also includes developing the country's first regional waste management system in the Kolkata metropolitan area, including the country's third largest city in the form of Kolkata City, which is the center of economy, industry, and transportation for East India. This will thereby contribute to improving the living and public health environment, as well as environmental conservation for the local population.

In ODA loans to India, JBIC has supported a total of 12 afforestation projects in six states to date. This time, JBIC will support afforestation with community participation in the area almost equivalent to Tokyo in the State of Orissa with "the Orissa Forestry Sector Development Project". In addition, the project has a component of vocational training and microfinance (provision of small loans) to improve the living standards of the local inhabitants who rely on forests for their livelihood, thereby helping to regenerate forests and improve the living standards of the local population. Also through this project coastal disaster prevention forests, including mangroves, will be developed in coastal areas where cyclones frequently cause damage, and the habitat of wild animals such as Indian elephants will be improved.

#### (4) Promoting Knowledge Assistance

To increase the sustainability of project effectiveness, JBIC will provide knowledge assistance and technology transfer in various forms under the above projects. Major examples are described below.

In "the Delhi Mass Rapid Transport System Project (Phase 2) (I)" and "the Bangalore Metro Rail Project", HIV prevention programs will be carried out, including an awareness campaign for migrant workers to reduce the risk of HIV/AIDS.

In "the Bangalore Water Supply and Sewerage Project (II-2)", "the Hussain Sagar Lake and Catchment Area Improvement Project", and "the Kolkata Solid Waste Management Improvement Project", public awareness-raising campaign such as the preparation of leaflets, media campaigns, and school programs will be carried out in cooperation with local NGOs in order to enlighten citizens on improvements to sanitary conditions and to encourage their activities in improving hygiene.

In the project preparation stage, the following efforts have been made to provide the experience and know-how accumulated in Japanese local governments and universities to the relevant Indian entities. In "the Hussain Sagar Lake and Catchment Area Improvement Project", know-how on conserving the water quality in Biwa Lake was offered in partnership

with Hikone City and the University of Shiga Prefecture. The Orissa Forestry Sector Development Project includes a component for developing disaster prevention forests on coastal areas where cyclones frequently cause damage. Therefore, Japanese experience and know-how were provided in partnership with Akita Prefecture, which suffered the Nihonkai-Chubu Earthquake Tsunami in 1983, and with Akita University, which has abundant achievements and experience in studying the impacts of natural disasters. Furthermore, in "the Kolkata Solid Waste Management Improvement Project", presentations were made on the experience of solid waste disposal in Tokyo in partnership with the 23 wards of Tokyo (Clean Association of Tokyo 23).

"The Hussain Sagar Lake and Catchment Area Improvement Project", "the Swan River Integrated Watershed Management Project" and "the Kolkata Solid Waste Management Improvement Project" are respectively establishing a recycled water system, integrated watershed management, and a regional waste management system, including an environmentally friendly sanitary landfill. These efforts are either the first of their kind or have rarely been attempted in India, and will thus serve as models in their respective areas.

5. The list of individual projects is shown below. Visit JBIC's website for more detailed information on these projects.

([Click here for details](#))

## 1. Loan Amount and Terms

Project Name	Amount (Mil. Yen)	Interest Rate (% per annum)	Repayment Period/Grace Period(Years)	Procurement
Purulia Pumped Storage Project (III)	17,963	1.3	30/10	General Untied
Bangalore Water Supply and Sewerage Project (II-2)	28,358	0.75*(Sewerage) 1.3(Others)	40/10*(Sewerage) 30/10(Others)	
Rural Electrification Project	20,629	0.75	15/5	
Delhi Mass Rapid Transport System Project (Phase 2) (I)	14,900	1.3	30/10	
Bangalore Metro Rail Project	44,704	1.3	30/10	
Swan River Integrated Watershed Management Project	3,493	0.75*	40/10*	
Orissa Forestry Sector Development Project	13,937	0.75*	40/10*	
Hussain Sagar Lake and Catchment Area Improvement Project	7,729	0.75*	40/10*	
Kolkata Solid Waste Management Improvement Project	3,584	0.75*	40/10*	
Visakhapatnam Port Expansion Project (E/S)	161	1.3	30/10	
Total	155,458			

\*JBIC actively supports developing countries' efforts to address global issues by applying lower-than-ordinary interest rates to environmental projects.

## (1) Purulia Pumped Storage Project (III)

## (a) Project Background and Necessity

In India, a chronic power shortage is hindering industrial development and improvements to the standard of living. Eliminating power shortages is an urgent issue for the country's economic development and the reduction of poverty. In West Bengal, a state in eastern India with a population of 80 million in which the country's third largest city, Kolkata, is located, industrialization has raised power demand by an average of 5-6% annually over the past decade. As a result, the state is facing a shortage of about 7% of its total demand during peak times. Thus there is a need to construct power plants and increase the capacity of transmission lines. In addition, the proportion of thermal power in the total power generated in the state exceeds 95%, compared with 70% in India as a whole. Moreover, since it is difficult to adjust power output to correspond to fluctuations in demand for electric power in a day through thermal power generation that uses boilers, there is a need to construct hydropower plants which can adjust power output to meet peak demand and which have less impact on the environment.

## (b) Project Purpose and Outline

Through this project a pumped storage power plant with a capacity of 900 MW (225 MW 4 generating units), the largest in the country will be built along with the related transmission and substation facilities. To date, JBIC has provided ODA loans in the aggregate amount of 44,098 billion yen for the project for the two phases (20.52 billion yen for the first phase (February 1995) and 23.578 billion yen for the second phase (March 2004)). This is the final financial support JBIC will provide for this project.

In addition to meeting peak power demand, the project will make effective use of surplus power by adopting pumped storage power generation. This system receives surplus power supplied from other thermal power plants during off hours when power demand is low like at night, pumps up water from the lower reservoir to the upper reservoir, and uses this to generate power during peak hours.

The project has additional components that seek to promote total quality management (TQM) (an integral bottom-up scheme in the entire organization to achieve quality control targets); build the tariff setting and payment system in inter-state electric power transactions; and build a remote control system of transmission facilities. These were incorporated based on the recommendations of a JBIC-financed study conducted by a Japanese company for improving and strengthening the operational control of the constructed facilities.

The proceeds of the loan will be used for procuring power generation facilities, civil works, and for consulting services.

## Project Executing Agency

West Bengal State Electricity Board (WBSEB)

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## (2) Bangalore Water Supply and Sewerage Project (II-2)

## (a) Project Background and Necessity

In India, water resource development and water supply facilities are falling behind the growing population and surging demand for water caused by industrialization. Even in the capital city of Delhi, water is supplied only about four hours a day. The southern state of Karnataka, with its state capital of Bangalore where this project is being undertaken, is called the "Silicon Valley of India", and many foreign companies, including the largest Japanese car manufacturer, have a presence there. However, water is supplied to the Bangalore metropolitan area, which includes the peripheral eight municipalities, only six hours every other day.

Along with the rapid industrial development, the population in this metropolitan area is forecast to climb sharply from the present 6 million to 7.3 million by 2011. Under these circumstances, it is an urgent issue to have a stable water supply through expansion of the water supply facilities. In parallel with this there is also a need to develop matching sewer treatment facilities to improve the public health environment in the area.

(b) Project Purpose and Outline

The project aims to improve living conditions and help increase industrial activity in the Bangalore metropolitan area by expanding water supply facilities and developing a sewerage system (with a sewage treatment capacity of 0.4 million cubic meters per day). Since about 60 Japanese companies are operating in this area its industry, which includes these companies, is expected to benefit from this project.

Since Bangalore is at an altitude of 900m in the Deccan Plateau, there is no room to develop new water resources in the neighboring region. Thus a plan is underway to supply water by using the Cauvery River located 100km southwest of the city as a water source by pumping up water as much as 300m to make up for the difference in altitude. This project is the second phase of the fourth development plan. To date, JBIC has provided an ODA loan of 41.997 billion yen for the first tranche of the second phase (March 2005), and this is the last financial support JBIC will provide for the second phase. JBIC also supported the Bangalore City Water and Sewerage Development Project as the first phase of the project (providing 28.452 billion yen; signing: January 1996).

The project is not limited to expanding water supply and sewerage facilities. In an effort to comprehensively improve water services it will engage in human resource development, repair the water distribution networks in which leakage exceeds more than 30% of total water supply, make broader use of automatic tariff payment machines, and provide subcontracting operations to the private sector. Furthermore, the project will conduct public information activities to increase the understanding of Bangalore citizens on water services and awareness-raising activities to inform the consumers of the importance of saving water and its efficient use. The project is also targeting about 360 slums where health conditions are poor. In such places, awareness-raising activities will be conducted for the residents along with the development of a water distribution and sewerage network with a focus on women's participation, thereby enabling poor people to get involved in managing water and sewerage facilities on their own.

In this project, the U.S. Agency for International Development (USAID) provided a guarantee for the bonds issued by the Karnataka Urban Infrastructure Development and Finance Corporation to help finance water distribution network development in the peripheral eight municipalities of Bangalore, with water from the facilities constructed under the project being used. Thus, other international development assistance institutions and donor agencies have also provided cooperation for the project. In developing a water distribution and sewerage network in slums, JBIC is cooperating with Cities Alliance, set up by the UN Habitat, the World Bank, USAID, and others.

The proceeds of the loan will be used for civil works, the procurement of materials and equipment, and for consulting service.

Project Executing Agency

Bangalore Water Supply and Sewerage Board (BWSSB)

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(3) Rural Electrification Project

(a) Project Background and Necessity

In India's rural areas where 70% of the nation's population and 80% of the people living in poverty live, the household electrification rate remains at 44%, and households without access to electricity amount to as many as 78 million. Aside from reducing regional disparities, electrification will serve to reduce poverty through raising the living standards in rural areas and will boost economic activity by (1) developing small industries; (2) increasing hours spent on learning at night; (3) increasing knowledge, including knowledge of hygiene, with the prevalence of radios and television sets; (4) reducing work related to farming and domestic chores; and (5) preventing mosquito bites during sleep with the use of electric fans and thereby prevent the contraction of communicable diseases, such as malaria and dengue fever. For this reason, the present government has designated household electrification as one of its priority areas and has set the target of securing access to electricity for all of the households by 2009.

(b) Project Purpose and Outline

Under this project a power substation will be built and expanded, and power distribution networks will be developed in Andhra Pradesh in the south, Madhya Pradesh in the west, and Maharashtra in order to improve the living conditions of the people and boost economic and social activities through improving access to electric power for the households yet to be electrified. The project will help supply electricity to 2.79 million households and serve to benefit about 15 million people.

The Government of India will supply the equipment necessary for electrification free of charge, including low-voltage converters, power lines to individual households, and meters in related projects in an effort to increase the access of poor households to electricity. In addition, to cut back the costs for the operation and maintenance (O&M) of the facilities and make them meet the needs of community residents, a plan to delegate part of the construction as well as the O&M of power distribution facilities to community organizations, village administrative units, and NGOs is in the works.

Furthermore, in order to avoid the situation where regional power distribution corporations suffer from personnel shortages and a lack of funding caused by financial degradation (a result of their having to bear O&M costs with those for the expansion of electrified areas), the Rural Electrification Corporation Limited, as a nodal agency for implementing the project, will promote and monitor reforms. These reforms will include a revision of electricity tariffs, a reduction in transmission and distribution losses, improvements to the tariff collection rate, and a reduction of costs.

The proceeds of the loan will be used for the procurement of power distribution and substation facilities.

Project Executing Agency

- Rural Electrification Corporation Limited (REC)

Address: Core-4, SCOPE Complex, 7 Lodi Road, New Delhi 110003, India

TEL/FAX: +91-11-4175-7033

- Andhra Pradesh Central Power Distribution Company Limited

- Andhra Pradesh Eastern Power Distribution Company Limited

- Andhra Pradesh North Power Distribution Company Limited

- Andhra Pradesh Southern Power Distribution Company Limited

- Madhya Pradesh Madhya Kshetra Vidyut Vitran Co. Ltd.

- Madhya Pradesh Paschim Kshetra Vidyut Vitran Co. Ltd.

- Madhya Pradesh Poorv Kshetra Vidyut Vitran Co. Ltd.

- Maharashtra State Electricity Distribution Co. Ltd.

(4) Delhi Mass Rapid Transport System Project (Phase 2) (I)

(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 intense urban traffic congestion that has exacerbated serious environmental problems, including air pollution caused by vehicle emissions.

As the population in the capital city of Delhi has doubled over the past two decades to 14 million, the number of registered motor vehicles has surged from 520 thousand in 1980 to 4.17 million in 2004. To date, the Indian rail system has been developed primarily as a means for long-distance transport. For this reason neither short-distance rails 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 urban transport. In 2001, buses and private vehicles accounted for 60.0% and 39.5% of passenger transport volume in Delhi, respectively, while rails accounted for only 0.5%. This has given rise to chronic traffic congestion in Delhi, slowing down the average speed of motor vehicles in the city to 13km/hr. Furthermore, both the low-quality fuel used by these buses and private vehicles and their outmoded engines are causing serious air pollution. Delhi has the world's highest average annual atmospheric concentration of suspended particulate matter among major cities, being far worse than that of Beijing or Bangkok.

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 adverse impacts on the environment caused by vehicle emissions.

(b) Project Purpose 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 mass rapid transport system. The overall system will have a total length of 245km, and consist of underground, elevated, and at-grade sections. The first phase of the project, comprised of three lines spanning a total of about 59km, has been completed with the exception of a 3km segment. This loan is for the second phase of the project, comprised of five lines (of which three are extensions of the existing lines) extending a total of 53km. JBIC has already provided an aggregate total of 162.751 billion yen in ODA loans for the six tranches of the first phase. The breakdown of this aggregate amount is as follows: 1st tranche: 14.76 billion yen (February 1997); 2nd tranche: 6.732 billion yen (March 2001); 3rd tranche: 28.659 billion yen (February 2002); 4th tranche: 34.012 billion yen (March 2003); 5th tranche: 59.296 billion yen (March 2004) and 6th tranche: 19.292 billion yen (March 2005).

When rail service begins for the entire length of the second phase, 2.59 million riders per day are projected as a result of the enlarged role of the commuter rail service connecting the center of Delhi with its outskirts. In addition to the access to the Red Fort enabled by the first phase, access to the Qutub Minar, a registered World Heritage Site, will be developed under the project, and for this reason it is expected to promote tourism.

India is behind South Africa as the country with the world's second largest population of HIV-infected people, who total more than five million. Thus HIV prevention programs will be carried out as in the first phase, including an awareness campaign for migrant workers. Furthermore, in the first phase, at construction sites where the use of crash helmets and safety shoes had not been established as a practice in India, each worker was required to wear a helmet and safety shoes, in addition to which a conscious effort was made to implement strict organization and neatness. During the first phase the project spread awareness of safety and efficiency, and it is said to have brought a cultural revolution to traditional construction work in India. Similar measures will be taken in the second phase as well.

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

Project Executing Agency

Delhi Metro Rail Corporation Limited.

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#### (5) Bangalore Metro Rail Project

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

In the southern Indian state of Karnataka the metropolitan area surrounding the state capital of Bangalore has a population of 6 million and is known as the "Silicon Valley of India". It is developing rapidly with many foreign companies having established offices and factories, including the largest Japanese car manufacturer. Its population has doubled over the past two decades and the number of registered motor vehicles has risen sharply from 330 thousand in 1986 to 2.56 million in 2005. Like Delhi, neither short-distance rails connecting the outskirts to the city center, nor an intra-city rail network has been developed in Bangalore. This has given rise to chronic traffic congestion, slowing down the average speed of motor vehicles in the city to 10-12km/hr and causing serious air pollution. In fact, its average annual atmospheric concentration of suspended particulate matter exceeds that of Beijing or Bangkok.

Under these circumstances there is a need to construct a mass rapid transport system that will relieve traffic congestion as well as reduce air pollution and other adverse impacts on the environment caused by vehicle emissions.

##### (b) Project Purpose 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 Bangalore by constructing the city's first mass rapid transport system. The rail system will have a total length of 33km, and consist of underground, elevated, and at-grade sections. When rail service begins on the entire length, 1.07 million riders are projected per day.

This project has been prepared based on the experience of the Delhi Mass Rapid Transport System Project. Thus, similar initiatives will be taken as the project in Delhi.

Specifically, HIV prevention programs will be carried out, including an awareness campaign for migrant workers. Safety and efficiency will be improved at construction sites by requiring the workers to wear helmets and safety shoes, as well as by implementing strict organization and neatness.

The proceeds of the loan will be used for civil works in the construction of a subway corridor, procurement of signaling and telecommunication facilities, and for consulting services.

Project Executing Agency

Bangalore Metro Rail Corporation Ltd. (BMRC)

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#### (6) Swan River Integrated Watershed Management Project

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

Soil erosion and floods in rivers are causing increasingly serious damage to agricultural land in India. In particular, there is a growing need for measures to protect scarce agricultural land from soil erosion and flood damage in the low mountainous area, which extends in-between peripheries from plains to mountains, and where there is not much space for arable land. The northern Indian state of Himachal Pradesh has a population of 6 million and is located in the Himalayan Mountains where its hilly terrain has many low mountainous areas. In Una district of the state, the upstream of Swan River has been especially afflicted by serious forest degradation, soil erosion, and flood damage.

Thus in order to regenerate degraded forests and conserve agricultural land it is necessary to undertake an integrated watershed management project that consists of afforestation, the construction of flood control facilities, soil protection and land reclamation, and agricultural development.

##### (b) Project Purpose and Outline

The project aims to raise the standard of living of the local people such as the poor living in the catchment area of Swan River in Una district of the northern Indian state of Himachal Pradesh, through stable and increased production of agricultural and forestry products. Specifically, integrated watershed management activities will be undertaken, including afforestation to regenerate degraded forests, construction of erosion control dams to curb river erosion, construction of embankments to prevent flood damage on agricultural land, and land improvement through terracing and soil additions. To achieve these objectives, initiatives will be launched to improve livelihoods, to include microfinance (provision of small loans for poor and low-income people to reduce poverty), small infrastructure development like digging wells, and the promotion of agriculture and livestock farming. In addition, a significant emphasis will be placed on securing alternative income sources and encouraging self-help efforts to improve the living standards of those inhabitants living near the forests who might cut down trees to relieve poverty or undermine forest rejuvenation by allowing forest grazing of their livestock.

Furthermore, in an effort to conduct afforestation and forest management so that such activities will lead to a higher standard of living of the inhabitants near the forests the project has adopted Joint Forest Management. This will enable local communities and the Forest Department of Himachal Pradesh to conduct joint afforestation and forest management activities. Initiatives to improve the living standard will also be planned and undertaken by local communities so that socially vulnerable people like farmers with marginal landholdings and women will receive primary benefits. Training will also be provided for government officials and local residents to ensure more effective forest management in areas such as afforestation techniques and management methods.

As the World Bank and the Department for International Development (DFID) in Great Britain have provided assistance for afforestation and related areas in Himachal Pradesh, the project will draw on their experience in organizing and operating community organizations. In the low mountainous area integrated watershed management measures, including flood control and agricultural development, are important for local populations living on land that is vulnerable to natural disasters. These have the aim of raising the standard of living through conservation and the development of scarce agricultural land. Even so, such undertakings have rarely been seen in India. Therefore, there are hopes that this project will serve as a model and be scaled up in similar land areas.

The proceeds of the loan will be used for afforestation, civil works, activities to improve livelihoods, and for consulting services.

Project Executing Agency

Forest Department, Government of Himachal Pradesh

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#### (7) Orissa Forestry Sector Development Project

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

Forest cover in India is around 24%, which is lower than the world average of 30%, and per capita forest space is as small as one sixth of the world average. However, the increasing population and growing demand for timber have caused logging to accelerate even further. This has led to the degradation of forests and conservation capacities for soil and water, thereby squeezing the living conditions of impoverished people who rely on forests for obtaining items such as fodder, fuel wood, and cash-earning fruits.

In the State of Orissa the poverty ratio is the highest in India, with a population of 37 million and a poverty rate of 47.2%, according to the criteria for poverty set by the

Government of India. Here some 42% of the forests have become open forests with people depending on these forests for their livelihoods increasingly affected by their degradation. Orissa also has a growing proportion of indigenous ethnic groups called scheduled tribes (22.2% in Orissa relative to the national average of 8.2%).

Under these circumstances, it is necessary to regenerate degraded forests and improve the living standards of the poor.

(b) Project Purpose and Outline

The project aims to regenerate degraded forests and improve the living standards of local inhabitants in 14 of the total 51 forest and wildlife divisions in the state of Orissa by afforesting approximately 200,000ha of land area with local community participation, thereby improving the environment and alleviating poverty. The project also includes activities intended to improve the livelihoods of the local populous.

Under the project, where Joint Forest Management (JFM) is adopted for afforestation and forest management, measures to upgrade livelihoods like microfinance and the development of small-scale infrastructure like reservoirs will be taken to secure alternative income sources for inhabitants in and around the forests who may otherwise undermine forest regeneration. In addition, the project will promote self-help efforts to improve their living standards. For the implementation of JFM, forest management committees that consist of representatives from nearby villagers will be established. They will formulate their micro plans containing afforestation programs, hold training sessions on afforestation skills, and pursue greater efficiency in forest management with the assistance of NGOs familiar with local situations.

The project will also provide migration corridors and watering places for wild animals, in particular for Indian elephants who wander into human habitations, in order to mitigate conflicts between people and wildlife. Forests designed for disaster prevention will also be established by planting mangroves and other trees in the coastal areas where cyclones frequently cause damage.

This component of the project is included in consideration of the results of a tsunami impact assessment study with respect to the Tamil Nadu Afforestation Project (Loan Agreement signed in February 1997 for 13,324 million yen). This JBIC-financed project was located in the southern Indian state of Tamil Nadu, where the tsunami in the Indian Ocean claimed some 8,000 lives in December 2004. The study revealed that in areas where mangroves had been planted, less than 10% of the houses were destroyed by the tsunami, while more than 50% of the houses were damaged in areas where no afforestation had been conducted.

As part of these knowledge assistance efforts, JBIC held a seminar in Orissa during the project formation stage. In partnership with Akita Prefecture, which suffered the Nihonkai-Chubu Earthquake Tsunami in 1983, and with Akita University, which has a great deal of achievements and experience in studying the impacts of natural disasters, Japanese experience and know-how were presented to the relevant institutions in India.

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

Project Executing Agency

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(8) Hussain Sagar Lake and Catchment Area Improvement Project

(a) Project Background and Necessity

In India, sewerage system development has failed to keep pace with the rapid influx of population into urban areas and the progression of industrialization. As a result, raw sewage far exceeding the self-purification capacity is flowing into the main river. This has caused health hazards for local residents, including diarrhea, hepatitis, and other waterborne diseases, not to mention bad odors.

The Hyderabad metropolitan area has a population of about 7 million and is centered around Hyderabad, the state capital of the southern Indian state of Andhra Pradesh. It is home to a large number of IT companies and has been growing rapidly as a tourist destination. Hussain Sagar Lake, an artificial lake situated in the center of this metropolitan area, was constructed in 1562 and revered as a symbol of the Hyderabad. While domestic sewage and industrial wastewater have been rapidly increasing along with the robust economic growth, sewage treatment facilities have been underdeveloped in the catchment areas of the river that flow into the lake where there is a population of some 1.6 million. As a result, untreated wastewater is flowing into the lake, thus raising concern not only for the bad odor, but also with respect to health hazards for local residents and tourists in the areas surrounding the lake and catchment areas. The quality of water in Hussain Sagar Lake is much worse than in Teganuma, Chiba, which ranked the worst lake in terms of the quality of water in Japan during the fiscal period from 1974-2001 when it was at its worst in the late 1970s.

Since there is no alternative water resource that could be newly developed in the outskirts of the metropolitan area, a plan is being prepared to pump water up over the 450m difference in altitude and supply water from the Krishna River, which is 115km away from the area. This water supply project alone is not expected to meet the surging water demand, however, and pumping water will only increase the cost of water supply services. What is needed instead is an effective use of the Hussain Sagar Lake, which was once used as a resource for drinking and industrial and agricultural water in ancient times.

Under these circumstances, there is a growing need for the development of sewerage facilities and the cleaning of the Hussain Sagar Lake in order to improve public health in the Hyderabad metropolitan area.

(b) Project Purpose and Outline

The project aims to improve the sanitary conditions of the local people and promote efficient water use in the catchment area and vicinity of the lake by carrying out construction on sewage treatment facilities and recycled water supply facilities, the dredging of sediment, and similar measures.

In Japan, recycled water from over 200 sewage treatment plants is used as flushing water in toilets, cooling water, and spraying water in the park. In contrast, the use of recycled water has been limited in India, where it has been used for farming in some areas. Population growth has caused water shortages in many regions across India, however, and the effective use of water resources has emerged as a significant issue. In particular, the Hyderabad metropolitan area faces shortage of its water supply and increasing water supply production costs. This project is implemented as a pilot project to boost the utilization of recycled water.

Other project components include awareness-raising activities such as the preparation of leaflets and carrying out school programs and media campaigns jointly with NGOs and civil volunteers in order to appeal to the significance of improving the hygienic environment in the community and of citizens' efforts to clean up the lake.

As part of knowledge assistance, JBIC held a seminar in Hyderabad during the preparation stage of the project, in partnership with Hikone City (the Hikone International Friendship Association has a friendship arrangement with its counterpart in Hyderabad), as well as the University of Shiga Prefecture, to present know-how related to preserving the water quality of Lake Biwa to officials at related Indian institutions. In addition, with reference to lake management and sewage treatment of the Hussain Sagar Lake, JBIC enlists cooperation from JICA experts for conducting technical training for local officials.

The proceeds of the loan will be applied to civil work, including the construction of sewerage facilities, purchase of equipment and materials, and for consulting services.

Project Executing Agency

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(9) Kolkata Solid Waste Management Improvement Project

(a) Project Background and Necessity

Although a rule concerning the collection and treatment of municipal solid waste was established in 2000, practical regulation and control in India has remained insufficient. Solid waste from households and other locations is simply thrown away without being separated onto reclaimed land where no measures are taken to prevent the dispersal of waste, bad odors, or groundwater pollution. In addition to which illegal disposal is often seen.

The Kolkata metropolitan area has a population of about 15 million and includes Kolkata city, which is the capital of West Bengal State of East India and houses the Kolkata Port—one of the major ports in India. It has been developed as an economic and industrial hub of eastern India since the British colonial days. However, the rapidly increasing municipal solid waste is not properly treated in this area. Solid waste left on the street has become a source of bad odor and attracts harmful insects, has polluted soil and groundwater in and under the dumping site, and has caused drainage flooding during the rainy season by throwing waste away in the drainage system.

Under these circumstances there is growing need for the development of a solid waste management facility that takes into account environmental considerations and the promotion of the 3Rs (reduce, reuse, and recycle solid waste) by adopting separated collection and production of compost (organic fertilizer).

(b) Project Purpose and Outline

The project aims to establish a regional solid waste management system to include a sanitary landfill and would cover six municipalities in the northern region of the Kolkata metropolitan area, thereby improving hygienic conditions for the people in the region through adequate solid waste disposal. This is the first introduction of an appropriate regional waste management system, not only in this metropolitan area, but across India as well. This project is thus being implemented so it will permeate to other regions in India as a model municipal solid waste management project.

The project will adopt door-to-door collection and the separation of organic wastes from others types at the source before collection in all of the target regions. Organic wastes will be composted and used as organic fertilizer for agricultural purposes. Its use as soil in the development of parks, reclaimed swamps, and on sanitary landfills will help prevent waste dispersal and bad odors. In designing the final disposal site, environmental considerations were made for the sake of preventing hazardous effects such as waste dispersal, bad odors, and the pollution of groundwater. With regard to scavengers (informal garbage collectors) who collect recyclable bottles and cans, efforts will be made so as not to exclude them from the new system by promoting their formal employment, providing occupational training, and improving their health conditions. In addition, in a concerted effort with local NGOs and educational institutions, awareness-raising activities will be carried out to boost separated collection and the 3Rs, such as by distributing leaflets, hanging posters, holding seminars, and providing school programs. Given that it is generally women who handle housekeeping and separate and take out solid waste, these enlightenment campaign will involve women's groups as contact points.

As part of its knowledge assistance, JBIC held a seminar during the project preparation stage in the Kolkata metropolitan area in partnership with the 23 wards of Tokyo (Clean Association of Tokyo 23) to present the solid waste management situation in Tokyo to the related Indian agency officials.

The proceeds of the loan will be applied to civil work for the construction of municipal solid waste management facilities, the purchase of equipment and materials, as well as for consulting services.

Project Executing Agency

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(10) Visakhapatnam Port Expansion Project (E/S)

(a) Project Background and Necessity

In India, marine transport plays an essential role in international trade and domestic transportation. The cargo volume handled at Indian ports has seen a rapid growth in recent years due to the country's open-door policy (280 million tons in FY2000~380 million tons in FY2004). However, these ports are not catching up with the growing size of the ships coming into the harbor nor their increasing number as a result of the aging port facilities, inefficient operation, inadequate addition or expansion of mooring facilities, as well as waterways and berths with inadequate water depth.

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 (some 50 million tons) annually for five consecutive years. Of these goods, about 30% consist of iron ore (16.5 million tons). India is the 4th largest iron ore producer (3rd in exports), and Visakhapatnam Port is one of the key shipping ports for exporting high-quality iron ore produced at the Bailadila Mine. In the meantime Japan, which relies on imports from India for 10% of its imported iron ore, has close ties with the Bailadila Mine and Visakhapatnam Port, partly because the development of the outer harbor of Visakhapatnam Port and Bailadila Mine was financed by a Japanese ODA loan in the 1970s. In fact, as much as 30% of the iron ore produced at Bailadila is imported to Japan. The volume of iron ore handled by the outer harbor of Visakhapatnam Port is projected to increase from the current 14.2 million tons to 19 million tons in 2012. In addition, ships coming into the harbor are expected to grow in size. Expansion of this port is necessary in order to ensure long-term, stable, and effective exports from the port.

(b) Project Purpose and Outline

The project aims to upgrade transport capacity and improve the transport effectiveness of Visakhapatnam Port by consolidating the ground used as an iron ore stockpiling site, dredging waterways and berths, and strengthening mooring facilities, thereby facilitating increased iron ore exports from and economic growth of the country. The ODA loan is intended to cover engineering services (E/S), including investigation and design, preceding the construction work.

The proceeds of the loan will be applied to consulting services.

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