Annual Report
of
Jasa Tirta I Public Corporation (*PJT I*)
2005

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Foreword

This report presents annual report of 2005 of Jasa Tirta I Public Corporation as member of Network of Asian River Basin Organizations (NARBO).

As an activity of NARBO Work Plan 2006-2007, that agreed at the Second General Meeting of NARBO held in Jatiluhur – Indonesia on February 14 to 16, 2006, RBO Annual Report is addressed to promote advocacy, raising awareness, and exchange of information and good practices on Integrated Water Resources Management (IWRM).

Hopefully this report will provide useful information for us in strengthening the capacity and effectiveness of River Basin Organizations (RBOs) in promoting IWRM and improving water governance.

Malang, April 2006

Socheh
President Director
Jasa Tirta I Public Corporation

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1. Summary

Jasa Tirta I Public Corporation (hereinafter referred to as PJT I) was established based on Government Regulation No. 5 of 1990 and revised by Government Regulation No. 93 of 1999. Then Presidential Decree No. 129 of 2000 stipulating additional basin of Bengawan Solo to be managed. The responsibility of PJT I is to manage and conserve the water resources and the infrastructures in the Brantas River and Bengawan Solo River basins for the regional and national development benefit.

Main tasks of PJT I are as follows: perform operation and maintenance of the water resources infrastructures, economic dealings in water utilization, river basin management including water resources conservation, development and utilization, and rehabilitation of the water resources infrastructures.

PJT I provides the water service (supply) to Municipal Drinking Water Enterprise (PDAM), State Electric Company (PLN), industries, plantation, fisheries, flushing and other utilization.

1.1. Organization

PJT I was established based on Government Regulation No. 5 of 1990 and revised by Government Regulation No. 93 of 1999. The responsibility of *PJT I* is to manage and conserve the water resources in the Brantas River and Bengawan Solo River basins for the regional and national development benefit.

The purpose and objective of *PJT I* are to conduct public utilization on water resources in sufficient and high quality manner for fulfilling public needs, and carry out specific tasks given by the Government in performing river basin management and to join national economic development by participating on national development program especially in water resources management sector.

Financial source for undertaking of the main tasks in water resources management in the basin carried out by *PJT I*, are secured from the beneficiaries participation. Beneficiaries gradually bear the operational cost of the assigned corporate body. Basically, beneficiaries render their participation in the following sources: beneficiaries pay for water services, rendered in form of water fee and tax; polluters are obliged to pay pollution fee and tax (not yet implemented but legal background is being drafted); Government finances social services like flood control, water quality control, and water resources conservation.

Main tasks of *PJT I* based on Ministry of Public Works Regulation No. 56/PRT/1991 on General Policy of *PJT I* Management (Article 6) are as follows:

- Perform operation and maintenance of the water resources infrastructures
- Economic dealings in water utilization
- River basin management including water resources conservation, development and utilization
- Rehabilitation of the water resources infrastructures

PJT I has vision and mission as follows:
Vision: Government Owned Company that capable to manage water resources in professional, innovative and sustainable manner supported by all stakeholders.

Mission:

- To conduct services for public utilization on water resources in sufficient and high quality manner for fulfilling public needs
- To manage water resources effectively and efficiently including O&M activities of water resources infrastructures, conservation, making efficient use of water and controlling destructive force of water according to the task given by the Government based of stakeholders' participation.

- To conduct corporation management in order to reach healthy condition.

PJT I's responsibilities include supervision of water resources master plans, review of existing master plans, monitoring of both river water quality and industrial effluent, data analysis and modeling. *PJT I* is also involved in increasing public awareness and is concerned with pollution issues, inform and educate the public through public campaigns. *PJT I* provides the water service (supply) to Municipal Drinking Water Enterprise (PDAM), State Electric Company (PLN), plantation, fisheries, maintenance flow and other utilization.

1.2. NARBO Activities

In 2005, *PJT I* carried out the activities as summarized below:

(1) *PJT I* participated in 3rd NARBO Training Workshop in Korea, November 2005.

(2) *PJT I* dispatched staff to KOWACO to conduct staff exchange program according Agreement of Exchange of Personnel on Twinning Program between KOWACO & *PJT I* & *PJT II*, September 2005.

(3) *PJT I* participated in the Session of Capacity Development in RBOs, the 2nd Southeast Asia Water Forum as member of Organizing Committee, Bali, Indonesia, August-September 2005.

(4) *PJT I* dispatched staffs to JWA to conduct staff exchange program according Agreement of Exchange of Personnel on Twinning Program between JWA & *PJT I* & *PJT II*, July 2005.

(5) *PJT I* participated in the 2nd Southeast Asia Water Forum Preparatory Meeting, May 2005.

(6) *PJT I* received JWA staffs to conduct staff exchange program according Agreement of Exchange of Personnel on Twinning Program between JWA & *PJT I* & *PJT II*, April 2005.

(7) *PJT I* participated in the 2nd Southeast Asia Water Forum Preparatory Meeting, January 2005.

(8) *PJT I* participated actively in Indonesian NARBO Secretariat (Vice Executive Director).

2. Organization

PJT I was established as a pilot of a new concept of corporatization in water resources management, i.e.: a river basin that is managed by a neutral and professional institution who applies in balanced between healthy corporation principles and accountable public service norms on water resources, based on the principle of "One River, One Plan, One Integrated Management" supported by public, private and stakeholders participation. Many aspects of Integrated Water Resources Management and water governance system were developed and implemented in these basins. River infrastructures are in better condition, basin productivity and public awareness as well as user's contributions for financing O&M activities increase significantly.

2.1. The Purpose of *PJT I* and the Extension of the Projects

In the framework of performing the main task to perform operation and maintenance of the water resources infrastructures, in the field of operation, *PJT I* has a vital role in the activities as follows: licensing for water resources utilization, water allocation, flood control, and pollution control. In performing these activities, *PJT I* coordinates and cooperates with related institutions, particularly with Local Government in the operational matters. Considering available laws and regulations, the scope of activities and roles of *PJT I* are as follows:

Activity	Role
Licensing for water resources utilization	Provide technical recommendation
Water allocation	Prepare water allocation pattern for East Java Water Management Committee, perform and control water allocation by conducting reservoir operations in accordance with the pattern and licenses given to the users
Flood control	Prepare flood control manual and perform flood control using facility of FFWS
Pollution control	Provide technical recommendation on licensing for waste water discharge, monitor water quality and report to the Governor

Implementation of the main task of *PJT I* in the field of maintenance covers maintenance of water resources and its infrastructures (consisting of preventive, corrective and emergency maintenance of the infrastructures, sand mining control, sedimentation control, rehabilitation of critical watershed, land use arrangement in river corridor area). The scope of activities and roles of *PJT I* in the field of maintenance are as follows:

Activity	Role
Maintenance and rehabilitation of infrastructures	Prepare annual program and implement the works
Sand mining control	Provide technical recommendation in licensing for sand mining, monitor and control the implementation of sand mining with related agencies
Sedimentation control	Prepare annual program and implement the works
Critical watershed	Prepare soil and water conservation program, implement the works in cooperation with related agencies
River corridor control	Prepare land use planning and technical recommendation in licensing for river corridor utilization

2.2. The Legislation Backing Up *PJT I* and Related Ministries and Agencies

PJT I was established based on Government Regulation No. 5 of 1990 and revised by Government Regulation No. 93 of 1999. Others legislation back up *PJT I* are: 1) Ministry of Public Works Regulation No. 56/PRT/1991 on General policy of PJT management; 2) Presidential Decree No. 58 of 1990 on the designation of PJT as an agency which can collect and receive the contribution for operation and maintenance of water resources infrastructures.

For administrative and financial matters, *PJT I* is supervised by Ministry of Finance, Ministry of State Owned Company and Ministry of Public Works; for technical matters is supervised by Ministry of Public Works (Directorate General of Water Resources); and for operational matters supervised by Regional Government of East Java and Middle of Java.

2.3. The History of *PJT I*

The history of *PJT I* can not be separated from Brantas River basin development commenced in 1961. The development is conducted on a series of master plans that involves stage-wise planning in accordance to the national development requirements. These master plans are summarized below:

- **Master Plan I** was prepared in 1961, emphasizes on flood control by developing dams at the upper reaches and river improvements to increase flood relief capacity.
- **Master Plan II** was prepared in 1973 after most objectives of the first master plan were achieved. This master plan was founded in accordance to the government policy on food sustainability, by emphasizing on irrigation development.
- **Master Plan III** was prepared in 1985 after irrigation schemes were developed in the basin and as result of the irrigation development, agricultural intensification was made possible. The third master plan emphasizes on water supply for domestic and industrial uses, as more urban area is evident in the basin.
- **Master Plan IV** was prepared in 1998, to emphasize on effective water resources conservation and management.

Development in the basin resulted into 8 (eight) reservoirs (Sengguruh, Sutami, Lahor, Wlingi, Lodoyo, Selorejo, Bening and Wonorejo), four river-improvement-schemes, four barrages, and three rubber dams. Total investment in water resources infrastructure is priced Rp 7.63 trillion based on the year 2003 price level (US$ 0.097 billion, Yen 78.8 billion, Rp. 258.9 billion).

After construction period in Brantas River basin, it is necessary to maintain function of the completed infrastructures in order to ensure maximum benefit to achieve the designated technical life span and to achieve sustainable development. Adequate operation and maintenance activities are necessary to be conducted by a permanent institution, with professional staff and adequate budget. Further, it is necessary to maintain the function of the water resources infrastructures to ensure optimum benefit at their planned lifetime. Adequate operation and maintenance (O&M) activities are necessary to be performed; however, these activities encountered specific problems as follows:

1) Institution

Until 1990, the Brantas River basin has no permanent institution that could perform O&M activities in a conceptual and sustainable manner. Brantas River Basin Development Project (BRBDP) is a temporal institution whose duty is only to carry out the construction and not the O&M. Since there are many sectors in utilization of water resources in the basin, and in the other hand, the water availability is much influenced by climate and human activities, this condition will lead to conflict among uses and users. Then it is required a neutral institution to manage water resources in the basin to meet the various needs.

2) Funding

BRBDP who had then to carry out the O&M, encountered problems in obtaining fund for these activities due to the limited National Government Budget.

3) Water Resources Degradation

Lack of O&M budget resulted in degradation of the water resources infrastructures, and less coordination among related agencies complicated the water resources management. This scheme posed risk of water resources degradation, which in the long run shall harm economic development of the basin. Whereas water degradation is evident, sustainable resources are at risk.

PJT I was established in 1990, having working area in the Brantas River basin consist of its main river and 39 tributaries. Based on Presidential Decree No. 129 of 2000, Bengawan Solo River basin consists of its main river and 24 tributaries were added as *PJT I* working area. Figure 1 depicts the working area of *PJT I* in Brantas River and Bengawan Solo River basins. List of the rivers under jurisdiction of *PJT I* and water resources infrastructures managed by *PJT I* are shown in Table 1 and Table 2.

2.4. The Constitution of *PJT I* and the Number of Staff

The current organization structures of *PJT I* is as stipulated in Figure 2. Under the President Director (Mr. Socheh), there are 4 (four) Directors are assumed to be responsible for Technical Affairs (Mr. Soekistijono), Operation for Brantas River (Mr. Tjoek W. Subijanto), Operation for Bengawan Solo River (Mr. Sutioso Budirahardjo) and Administration & Finance (Mr. Hanief Zamzam).

a. Directorate for Technical Affairs

In the Directorate for Technical Affairs, all technical matters are handled. They include surveys and investigations, research and feasibility studies, planning and controlling program, technical guidance, environmental planning including wastewater treatment and water quality.

b. Directorate for Operations

In the Directorate for Operations, all the routine operations are handled. They include O&M activities, water resources management, consulting and constructing services and equipment utilization. The daily O&M of rivers and the infrastructures, monitoring and control of flood, water supply in the field, sand mining and land utilization are being done by Division of Water Services.

c. Directorate for Administration and Finance

In the Directorate for Administration and Finance, managerial matters related to administration and finance is handled. The financial reporting, budgeting and accounting are being done by Bureau of Finance. The human resources development and general affairs are being dealt by Bureau of Human Resources Development and General Affairs.

The number of staffs of *PJT I* as of 31 December 2005 is 569 consist of Malang headquarters (170), Division (340) and Solo Office (59). There are 4 (two) types of employment in *PJT I*, organic staff, non-organic staff, honorary and outsourcer. An organic staff is considered as a permanent that can be divided into a government official and non-government official. A non-organic staff is considered as non-permanent staff that divided into the staff with specified contract period and non-specified contract period.

2.5. The Financial System and the Size of Annual Budget

PJT I is a self-supporting corporation independent of the State budget. The detail of revenues and expenses of *PJT I* in 2005 are summarized as follows:

Detail of 2005 Revenues by Source

The 2005 revenue of *PJT I* by each source is shown in table below. The revenue amounted to Rp. 74,223 million consists of water service sector Rp. 59,926 million (80.74%) and non-water service Rp. 14,297 million (19.26%). Of the total revenue, that State Electric Company (*PLN*) occupied the largest share of 42.10 %, followed by industries of 21.47% and by PDAM of 17.17 %.

No.	Source	Revenue	Percentage
A	**Water Service**	**59,926.0**	**80.74%**
1	State Electric Company (PLN)	31,244.9	42.10%
2	Municipal Drinking Water Enterprise (PDAM)	12,746.2	17.17%
3	Industries	15,934.9	21.47%
B	**Non Water Service**	**14,297.2**	**19.26%**
1	Tourism	2,848.1	3.84%
2	Equipment service	4,718.0	6.36%
3	Constructing service	5,763.5	7.77%
4	Consulting service and others	967.6	1.30%

Detail of 2005 Expenses

The 2005 operating expense is shown in the table below. The total 2005 operating expenses amounted to Rp. 65,937 million. The O&M cost was Rp. 33,693 million of which share was the largest in the total operating expenses with 51.10 % followed by the personnel cost of 19.56 %.

No.	Source	Expenses	Percentage
A	**Water Service**	**58,321.4**	**88.45%**
1	O&M	33,693.6	51.10%
2	Watershed conservation	1,006.3	1.53%
3	Depreciation	3,247.7	4.93%
4	Personnel	12,896.0	19.56%
5	Bonus	1,579.6	2.40%
6	Duty fee	1,883.9	2.86%
7	General expenses	2,655.0	4.03%
8	Marketing	1,058.9	1.61%
9	Research and development	300.4	0.46%
B	**Non Water Service**	**7,616.3**	**11.55%**
1	Business expenses	7,382.1	11.20%
2	Depreciation	234.2	0.36%

2.6. The Outline of Implementing Tasks

The outline of implementing tasks is summarized below:

1. Perform operation and maintenance of the water resources infrastructures

a. Operation

- Flood control in Brantas River

Using FFWS, *PJT I* conducted water quantity monitoring in Brantas basin in order to control flood of 50 year period. In 2005 high discharges recorded at some points are as follows: Kediri Station (1,578 m^3/s) on 11 February 2005 and Porong Station (1,754 m^3/s) on 12 December 2005. Locations of rainfall gauging and water level gauging within the telemetering system of FFWS can

be seen in Figure 3.

- Water allocation and distribution

Present major water uses in the Brantas River and Bengawan Solo River and its main tributaries are for the various purposes as follows: electricity generation, irrigation (as the largest consumer), brackish water fish ponds (in the coastal belt of the Delta), domestic water supply, industrial water supply and river maintenance flow.

- Water quality control

In 2005, *PJT I* carried out water quality monitoring in Brantas River basin via 23 on-line water quality-monitoring stations along the river and at 51 sampling points off-line monitoring stations along the river and 56 points at potential industries pollution sources, 11 point at domestic disposal outlets of hospital, hotels and public sanitations. Location of online water quality monitoring stations can be seen in Figure 4. The water quality monitoring results in 2005 can be seen in Figure 5 to Figure 7.

b. Maintenance

Maintenance works of the water resources infrastructures done by *PJT I* in 2005 consists of sediment dredging in some reservoirs, intake of PDAMs and Industries; repair of revetment in many stretches of Brantas River and its tributaries under jurisdiction of *PJT I*, etc.

2. Economic dealings in water utilization

In 2005, total electricity production in the Brantas basin and Bengawan Solo basin were 935 million kWh and 39.20 million kWh respectively. Total water volume used for Domestic Water Supply Companies in Brantas basin and Bengawan Solo basin were about 260 million m^3 and 3.65 million m^3 respectively. Total water volume used for industries in Brantas basin and Bengawan Solo basins were about 120 million m^3 and 25.68 million m^3 respectively.

3. River basin management including water resources conservation, development and utilization

In 2005, *PJT I* carried out some activities related to watershed conservation in Brantas basin i.e. construction of 32 (twenty two) check dams and gully plugs and re-greening in critical areas of about 151.5 hectares. To promote community awareness on water resources conservation, *PJT I* conducted some activities e.g. support education program on water quality and environment to high school students, conduct socialization to community regarding effect of sand mining, solid waste management etc.

4. Rehabilitation of the water resources infrastructures

The rehabilitation of water resources infrastructures in Brantas basin in 2005 mainly done by Brantas River Development Project under finance of JBIC loan.

2.7. The Mid-term Project Master Plan

The 2005 project plan as part of Long Term Plan of *PJT I* for 2004-2008 are summarized as follows:

1. Perform operation and maintenance of the water resources infrastructures

The target for performing operation and maintenance of the water resources infrastructures are summarized as follows:

- increasing the guarantee of secured water allocation to the users by conduction O&M gradually based on priority. The project plan in 2005 was to increase the quality of O&M activities.
- promoting more reliable flood control by advancing flood-forecasting capability in cooperation with related agencies. The project plan in 2005 was to strengthen and develop the system.
- increasing budget for O&M activities and Government aid to finance preventive O&M. The project plan in 2005 was to submit the proposal and program to Government and establish

internal teamwork in realizing public service obligation.

2. Economic dealings in water utilization

Total electricity productions in the Brantas basin and Bengawan Solo basin in 2006 were planned 969 million kWh and 41 million kWh respectively. Total water volume used for Domestic Water Supply Companies in Brantas basin and Bengawan Solo basin were planned about 274 million m^3 and 4.35 million m^3 respectively. Total water volume used for industries in Brantas basin and Bengawan Solo basins were about 122 million m^3 and 27.44 million m^3 respectively.

3. River basin management including water resources conservation, development and utilization

The target for river basin management including water resources conservation, development and utilization are summarized as follows:

- Promoting water resources conservation by assisting related agencies in arranging conservation master plan, assisting the implementation of water resources conservation and regreening activities done by related agencies in area where affect reservoir sedimentation.
- Increasing water quality in main streams by assisting local governments in developing and implementing waste water discharge licensing, raising public awareness on pollution control and developing communal domestic waste treatment plant in cooperation with local government and universities. In 2005, it was proposed to have planning study and 1 (one) implementation project.

4. Rehabilitation of the water resources infrastructures

The target for Rehabilitation of the water resources infrastructures are summarized as follows:

- Realization of rehabilitation of the water resources infrastructures gradually based on priority, which directly related to increasing the corporate revenue (using internal budget), safety and welfare of the public (using Government budget). The project plan in 2005 was to have budget from Government for rehabilitation of the water resources infrastructures intended to promote safety and welfare of the public.

2.8. The Challenges for Implementation of Tasks

The challenges for implementation of projects based on the main task are summarized below:

1. Perform operation and maintenance of the water resources infrastructures

- Limited budget

In implementing the projects of O&M, *PJT I* has problem with limited budget. The revenue from beneficiaries in financing O&M of the infrastructures could cover only about 45% of the total cost. This condition will cause deferred maintenance and leads to degradation of the infrastructures.

- Old equipment

Most the equipments e.g. dredger, crane etc. are old and prone to malfunction. The existing Flood Forecasting and Warning System is also prone to malfunction. The system was completely installed and established at the end of 1990 and started its operation from the beginning of 1991. The hardware and software set in *PJT I* was the first generation, and this situation may cause difficulties and problems in operation and maintenance of the system.

2. Economic dealings in water utilization

- Sedimentation of Reservoirs

It has been estimated that Sutami Reservoir has lost nearly 50% of its gross storage and 40% of its active storage since construction in 1972 due to sedimentation, and Sengguruh Reservoir, which was completed in 1988 primarily to serve as a sediment trap for Sutami, has lost over 80% of its original gross storage. New storage is considerably more difficult and expensive to develop than were existing reservoirs. Solutions to the ongoing problem of reservoir sedimentation involve intensive dredging and expanded upland conservation efforts, such as the Sabo (check-dam)

development and rehabilitation on the slopes of Mt. Kelud.

- Water Quantity

The quantity of water available in the dry season is currently barely sufficient to meet existing demand, particularly when in stream water quality objectives are considered. This is particularly (but not exclusively) a concern in the high-consumption region below New Lengkong Barrage, which includes the Brantas Delta irrigation systems, the Greater Surabaya municipal area and a high percentage of Brantas Basin industries.

- Water Quality

Water quality problems are currently primarily related to biochemical oxygen demand (BOD) from domestic waste, agriculture and industry. Problems are not limited to dry season flows. Significant elevations in BOD have been observed during wet season runoff, suggesting that animal and other wastes accumulate during the dry season and are mobilized during the wet season.

- Low Water Use Efficiency

It has estimated that overall efficiency of irrigation water use is quite low in the Brantas Delta, around 27%, and this inefficiency contributes to the frequently observed water shortages in this region. Return flows in the delta cannot in general be reused, although they may provide flushing flows to the brackish fishponds. Inefficiencies for irrigation systems above New Lengkong have less profound consequences, since most return flows from upstream systems can be recycled in the Delta and Surabaya. Primary factors contributing to inefficiency include poor timing of deliveries and deteriorating infrastructure. Domestic water use efficiency is also low, with system losses in the Surabaya area estimated to be 30% - 45% of gross deliveries.

- Poor Cost Recovery in Irrigation

According to the Law No. 7 of 2004 on Water Resources, Indonesian farmers do not pay directly for irrigation water, as domestic (PDAM) and industrial users do. It is noted that the fact that *PJT I*'s revenues are largely derived from the sale of water to non-agricultural users creates an allocation bias against agricultural users. Although an irrigation service fee (ISF) system exists, collections are sporadic, and insufficient to cover irrigation-related O&M. The ISF is collected and paid for O&M of on farm facilities, not for primary and secondary canals. The observation that many farmers within Brantas surface irrigation systems invest in powered pump sets to augment surface water deliveries demonstrates that they are not unwilling to pay for irrigation water, however, provided that the timing and quantity are calibrated to their cropping requirements.

3. River basin management including water resources conservation, development and utilization

- Lack of coordination with related agencies

In conducting river basin management in Brantas basin including water resources conservation, development and utilization, there are many agencies concerned, each has function and responsibility. Sometimes, duplication and lack of coordination occur in the implementation stages.

4. Rehabilitation of the water resources infrastructures

- Limited budget

In implementing rehabilitation of the water resources infrastructures, *PJT I* has problem with limited budget. The expected fund from Government as realization of Government obligation principle to finance public service and safety could only cover small part of the total budget for rehabilitation.

3. NARBO Activities

This chapter describes NARBO Activities done by *PJT I* in detail as follows:

3.1. NARBO Training Workshop

At the 3rd NARBO Training Workshop "Technology for Integrated Water Resources Management – River Basin Approach" in Daejeon, Korea from November 14 to 18, 2005 *PJT I* dispatched 2 (two) staffs i.e. Mr. Moh. Taufiqurrachman and Mr. Ulie M. Dewanto. From participation in this Training Workshop, *PJT I* hoped to share experiences of developing and applying technologies for IWRM among Asian countries.

3.2. RBO Exchange Visits, Staff Exchange Programs, Twinning Programs

According Memorandum of Understanding on Twinning Program between Japan Water Agency and Indonesian Network of Asian River Basin, scope of the twinning program focuses on fields related to promoting water resources in order to get better understanding on IWRM implemented by the other party.

In order to realize this activity, Indonesian NARBO (*PJT I* as one of the members) and Japan Water Agency dispatched and hosted exchanged staffs between two sides. *PJT I* hosted 2 (two) staffs from JWA i.e. Mr. Yasuhiro Ochii and Mr. Masahiro Sugiura from 10 April 2005 to 9 July 2005 (three months) and dispatched 2 (two) staffs i.e. Mr. Alfan Rianto and Ms. Titik Indahyani from 12 July 2005 to 10 September 2005 (two months).

The objectives of *PJT I* in conducting Staff Exchange Program to JWA were:

a. Strengthen each side's capacity on Integrated Water Resources Management through continuous sharing of information and experience to solve problem as well as to contribute toward an improvement of ASIAN IWRM.
b. Bring good practice by Japan Water Agency to Perum Jasa Tirta I and Perum Jasa Tirta II.
c. Developing good relationship between JWA and *PJT I* & *PJT II* and also suggest to JWA according of comparing with the practice in PJT.

As results of Staff Exchange Program to JWA, *PJT I* concluded that:

a. JWA has been developing and managing water resources in 7 (seven) major rivers system in Japan for many years. As a result, JWA has gain a long experiences in integrated water resources management.
b. The condition between PJT and JWA are different, in this case not all JWA experience can be applied in *PJT I*n the short run or even in the mid run. However, introducing JWA experience in PJT staff through dissemination is necessary and as a result, the JWA experience can be applied in PJT step-wisely.
c. Some JWA's experience can be adopted such as:
   - JWA technology to handle algae blooming.
   - JWA technology to manage sedimentation problem.
   - Public awareness activities should be started from early young student (elementary school).
   - Good communication between community in the upstream area and downstream area is indispensable.

3.3. NARBO Promotion and Dissemination

For NARBO Promotion and Dissemination, NARBO organized a session of "Developing Capacity of River Basin Organizations" for the better water management in Asia In 2nd Southeast Asia Water

Forum, 31st August 2005, Bali, Indonesia. In this occasion, *PJT I* took role as member of Organizing Committee.

In addition, through this session it was confirmed that following viewpoint, function and capacity are needed for River Basin Organizations (RBOs);

1. Water resources management should be undertaken at a basin level with understandings of the geography, meteorology, history of water use, regional cultures and customs and various value judgments of the basin. Accordingly, its approach should differ from basin to basin. This means that there is no sole guideline that everyone has to follow. RBOs have to develop the original and pragmatic approach through their effort to establish the original water resources management that best fits to the basin.
2. River Basin Organizations (RBOs), who should play the important role as advocators in the basin, are the practitioners of water resources management that are well versed in the situation in the basin. RBOs have to continue effort to get the confidence from residents in the basin with much close relationship between governments, stakeholders and residents.
3. Therefore, RBOs are requested to make their effort for development of capacity and to be the professional on water resources management with high level of capability in technical, social and spiritual.
4. In order to achieve above matters, various experiences, profound knowledge, information and training for capacity development, are absolutely necessary to be strengthened among Asia. Accordingly, it is desirable to expedite information exchange, sharing knowledge and experiences, conducting training for RBOs.
5. It should be enhanced that the network activities at the ownership point of view the quite effective vehicle to attain capacity development. In this sense, the network consists of RBOs in monsoon Asia is quite significant because it is true that monsoon Asia region has a lot in common in water usage, water resources management and water issues. For this reason, NARBO which is the networking for Asian River Basin Organizations is established and shall be reinforced.
6. It is, however, rather difficult to do capacity development of RBOs without supports from the governments for its institution, system and financial aspect. Of course, supports from various kinds of bodies like from academic fields and development cooperation agencies collaboration / cooperation among countries are equally important.
7. RBOs gathered here at “Session on Developing Capacity in River Basin Organization”, and confirm to try to do our best for capacity development for people and country. Also we insist that the strong/possible assistance from the government and related organizations are essential.

4. Topics

4.1. Floods

Many floods occurred in Brantas River basin in 2005. The floods mainly occurred in the tributaries due to heavy rains caused banks collapse, inundation in paddy fields, damage of houses and other infrastructures. Location of flood occurrence in Brantas River basin in 2005 could be seen in Figure 8.

4.2. International Conferences

In 2005, *PJT I* participated in some international conferences e.g. 1) International Workshop on River Basin Management at the Lowest Appropriate Level, Poland, May 22-25, 2005, 2) Steering Committee Meeting of Twinbasin^{XN} Program and INBO World Liaison Bureau, Morocco, May 23-35, 2005, 3) International Symposium on Ecohydrology organized by Indonesian Institute of Science (LIPI) in cooperation with Ministry of Public Works, Indonesia, UNESCO Jakarta Office dan Indonesian National Committee for UNESCO, Bali-Indonesia, on November 21– 22, 2005.

4.3. International Cooperation

PJT I has international cooperation with some research agencies e.g. Disaster Prevention Research Institute (DPRI) of Kyoto University (started in 2000), Yamanashi University and National Institute for Land and Infrastructure Management (NILIM) – Ministry of Land, Infrastructure and Transport, Japan, in many research area e.g. forecasting and monitoring of flood, debris flow, rainfall characteristic in volcanic area of Asian Monsoon Area especially in Brantas basin.

Table 1 List of Rivers under Jurisdiction of *PJT I*

NO.	Brantas basin	Bengawan Solo basin
1	Brantas River *)	Bengawan Solo River *)
2	Amprong River	Tirtomoyo River
3	Lesti River	Keduwang River
4	Metro River	Walikan River
5	Lahor River	Dengkeng River
6	Bambang River	Blora River
7	Lekso River	Ceper River
8	Semut River	Ujung River
9	Jari River	Lohgede River
10	Putih River	Siwaluh River
11	Ewuh River	Grompol River
12	Badak River	Tempuran River
13	Tugu River	Mungkung River
14	Tawing River	Gambiran River
15	Ngasinan River	Madiun River
16	Bodeng River	Ketegan River
17	Parit Agung River	Cemer River
18	Parit Raya River	Catur River
19	Dawir River	Brangkal River
20	Song River	Gandong River
21	Ngrowo River	Kukur River
22	Kedak River	Jungke River
23	Serinjing River	Ketonggo River
24	Konto River	Trinil River
25	Bening River	Floodway Plangwot-Sedayulawas
26	Kuncir River	
27	Ulo River	
28	Kedung Soko River	
29	Widas River	
30	Beng River	
31	Brangkal River	
32	Marmoyo River	
33	Watudakon River	
34	Sadar River	
35	Kambing River	
36	Porong River	
37	Surabaya River	
38	Mas River	
39	Wonokromo River	
40	Kedurus River	

Table 2 Water Resources Infrastructures in Brantas River Basin Managed by *PJT I*

No	Structure	River	Purpose
A	**Large Dams** (Year of Operation)		
1	Selorejo Dam (1970)	Konto	Water supply for irrigation, hydro power generation, flood control, recreation
2	Sutami Dam (1972)	Brantas	Water supply for domestic, irrigation, industry, hydro power generation, flood control, recreation
3	Lahor Dam (1975)	Lahor	Water supply for domestic, irrigation, industry, flood control
4	Wlingi Dam (1978)	Brantas	Afterbay of Sutami Hydro power, water diversion for irrigation, hydro power generation, flood control, recreation
5	Bening Dam (1984)	Widas	Water supply for irrigation, hydro power generation, flood control, recreation
6	Sengguruh Dam (1988)	Lesti	Sediment control to Sutami reservoir, hydro power generation
7	Wonorejo Dam (2000)	Bodeng Song	Water supply for domestic, hydro power generation, flood control
B	**Barrages** (Year of Operation)		
1	New Lengkong (1974)	Porong	Water diversion for irrigation, domestic, and industry
2	Gunungsari (1981)	Surabaya	Water diversion for irrigation
3	Jagir (1981) (rehabilitation)	Wonokromo	Water diversion for domestic
4	Lodoyo (1983)	Brantas	Afterbay of Wlingi hydro power, hydro power generation
5	Tulungagung Gate(1986)	Ngrowo/Parit Agung Canal	Water regulation for domestic, hydro power, and flood control
6	Wonokromo (1990)	Mas	Flood control
7	Mrican (1992)	Brantas	Water diversion for irrigation
C	**Rubber dams** (Year of Operation)		
1	Gubeng (1990)	Mas	Water diversion for domestic
2	Jatimlerek (1993)	Brantas	Water diversion for irrigation
3	Menturus (1993)	Brantas	Water diversion for irrigation