

Key success factors for capacity development in the Brantas River Basin organisations in Indonesia

Tjoek Walujo Subijanto*, Harianto, Raymond Valiant Ruritan and Fahmi Hidayat

Jasa Tirta I Public Corporation, The Brantas and Bengawan Solo River Basin Management Agency, Jalan Surabaya No 2A Malang 65115, East Java, Indonesia

**Corresponding author. E-mail: tjoekwalujo@jasatirta1.net; tjoekws@gmail.com*

Abstract

The Brantas River Basin has been developed under a stage-wise approach, with an evolving institutional set-up that has paved the path for the continuous development of water resources potentials within the basin. Following the maxim of ‘One river, One plan, One management’, the basin has profited from consistent steps of development, initially under the Brantas Project, into a service-based river basin organisation, namely Jasa Tirta I Public Corporation (PJT-I), established in 1990 and based on the principle of cost recovery. Capacity development in the basin is driven by challenges and has been reformulated several times to meet these challenges. During the development stage, the Brantas Project not only built the dam and other infrastructures, but also helped to establish the designer, planners and technicians for dam development in Indonesia. Nowadays, the sustainability of PJT-I depends on the trust of the Government and the satisfaction of the users who receive the services rendered. Key success factors of capacity development are strong leadership, incentive schemes and, most importantly, the spirit of innovation, the willingness to learn and the eagerness to take on new challenges.

Keywords: Capacity development; Challenges; Key factors; Leadership; River basin organisation

1. Introduction

The notion of capacity development is normally associated with the capabilities of individuals, organisations and society to perform their functions. In the water sector, capacity development supports the transformation process of the implementation of integrated water resources management, including water policies and legislation, institutional development and human resources development.

The need for capacity development depends on the dynamic challenges that have to be undertaken by the organisation. It is far more than a technical intervention; it is a process of transformative change that

takes place not just in individuals but within institutions and society in a continuous and complex process. Capacity development programmes are more successful and more likely to be sustainable when they respond to internal initiative and when they are approached in a process-oriented manner rather than as single, one-time event (Land, 2000).

The notion of willingness or motivation is equally important, since it holds the key to the effective utilisation of such competencies. By distinguishing between ability on the one hand and willingness on the other, attention is drawn to the centrality of ownership to capacity development, and of the influence of incentives and motives on transforming capacity into performance. Appropriate incentives play an important part in mobilising and making use of existing capacities. Ownership becomes all the more significant when capacity development is associated with a process of change and transformation. Strong leadership and political commitment provide the basis for organisational ownership and are major factors in achieving successful programme outcomes. Strong leadership was identified to be among the most fundamental attributes for building motivation and willingness to participate by assuring a locally driven process of the capacity development initiatives.

Organisational culture is a set of collective behaviours as a reflection of the beliefs, values, norms and habits that exist within the organisation. How effective, efficient and sustainable the capacity development initiatives are depends on the commitment and consistency of management and employees to develop, strengthen and maintain the appropriate organisational culture and behaviours that support the capacity development initiatives. There are many aspects affecting the success of capacity-building programmes. It is not as simplistic as only improving training and education. The problem is a lack of financial resources and leadership, and the dependence on external assistance.

This paper describes and discusses the performance of the Brantas River Basin Development Project. It looks at the implementation of water resources development in the basin, the leadership and the *corps d'esprit* (the Brantas Spirit) as key success factors in capacity development during the Brantas River Basin development phase (1961–1990), and at the adoption of the key success factors of capacity development in the water resources management period, under PJT-I from 1991 up to now, gaining the trust of the Government and the satisfaction of users as the modalities to move the organisation forward to the next level.

2. The Brantas River Basin

2.1. General description of the basin

The basin is located in the Island of Java, Indonesia, covering a catchment area of about 11,800 km², and the main river is approximately 320 km long. The river is characterised by a clockwise watercourse centering on Mount Kelud and originating from the southeastern side of Mount Arjuna at the centre of the basin. The uppermost stream starts its course southeastward around the Semeru volcanic zone and then runs to the west parallel to the Southern Mountains. It changes its course again towards the north to avoid older volcanoes and Mount Wilis, running past the foot of Mount Wilis and Mount Kelud to reach Surabaya City and ultimately pouring into the Madura Strait. The main river traverses nine regencies and five municipalities. A general view of the basin is shown in Figure 1.

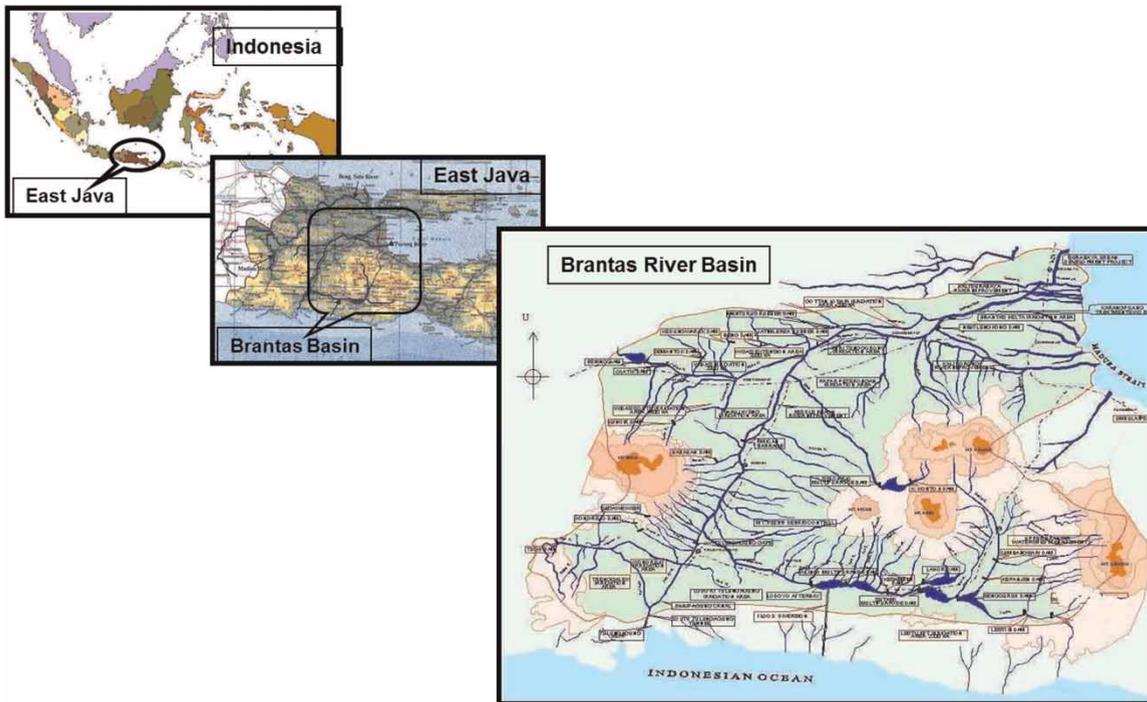


Fig. 1. Map of the Brantas River Basin.

2.2. The Brantas River Basin: development and management

2.2.1. Water resources development (1961–1990) (Japan International Cooperation Agency – JICA, 1998). Sediment deposition from the eruption of Mount Kelud decreased the river discharge capacity for carrying floodwaters. This caused flooding almost every year, resulting in personal injury, crop damage and loss of assets. In the late 1950s, the Indonesian Government established a national development policy to develop irrigation and hydropower with priority, to increase food production and to accelerate industrialisation. The Brantas River Basin was selected as one of the strategic basins for this policy.

During the Independence Era, modern water resources development was introduced in the basin after the Indonesian Government requested the preparation of a comprehensive water resources development plan as part of war-reparation assistance undertaken by the Japanese Government. Nippon Koei Consulting Services (NK) was asked to prepare the plan. A preliminary report was released in September 1960, which was finalised as the Comprehensive Report on the Kali Brantas Overall Project in April 1961, the first Master Plan for the Brantas River Basin development. Flood prevention was given a top priority in the initial stages, in addition to hydropower and irrigation. This was the first Indonesian water resources development master plan under the philosophy of ‘One River, One Plan’.

In 1961, the Brantas River Basin Development Project was formally launched by the Indonesian Government. NK was awarded the right to undertake the engineering services for the Karangates Dam and power station, which was the first priority infrastructure project within the first Master Plan. The Brantas River Basin Development Project commenced under the jurisdiction of different government offices such as the Irrigation Service of the Ministry of Public Works, Surabaya Municipal Irrigation Service,

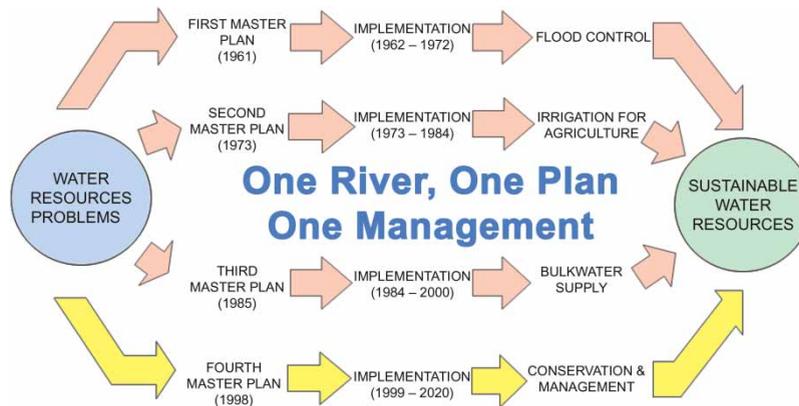


Fig. 2. Water resources development master plan of the Brantas River Basin.

and the State Electric Power Corporation. It was soon recognised that the Brantas River Basin Development Project, being a multi-purpose project, would be difficult to carry out within the framework of a single project. Thus, the Brantas River Basin Development Executing Office (the Brantas Project) was created in 1965, a body under the direct supervision of the Ministry of Public Works, which supervised and implemented the project in an efficient, effective and sustainable manner based on the ‘One River, One Plan, One Management’ principle.

This initial master plan was then periodically reviewed in order to update it in accordance with the emerging issues in the basin and national development requirements (Figure 2).

In sequential order, the following plans were undertaken in the basin:

- Master Plan I (1961) emphasised flood control by developing dams at the upper reaches and river improvements in the middle and lower reaches to increase flood relief capacity.
- Master Plan II (1973) emphasised irrigation development to support the government policy on food sustainability by developing dams, barrages and technical irrigation schemes.
- Master Plan III (1985) emphasised water supply for domestic and industrial uses to support the government policy on industrialisation.
- Master Plan IV (1998), emphasised conservation and effective water resources management to face the environment problems and challenges with regard to the implementation of effective water governance.

Over the past 30 years, water resources development in the basin has resulted in eight reservoirs (Sengguruh, Sutami, Lahor, Wlingi, Lodoyo, Selorejo, Bening and Wonorejo), four river-improvement schemes, four barrages, three rubber dams and other infrastructural attributes, resulting in benefits in flood control, irrigation, power generation, and domestic and industrial water supply (Figure 3).

Although it is difficult to quantify real benefits of this development scheme, it could be seen that various sectors in the basin enjoy benefits from the infrastructures. A comparison of the situation prior to the development (1960) and after development (1990) can be seen in Table 1.

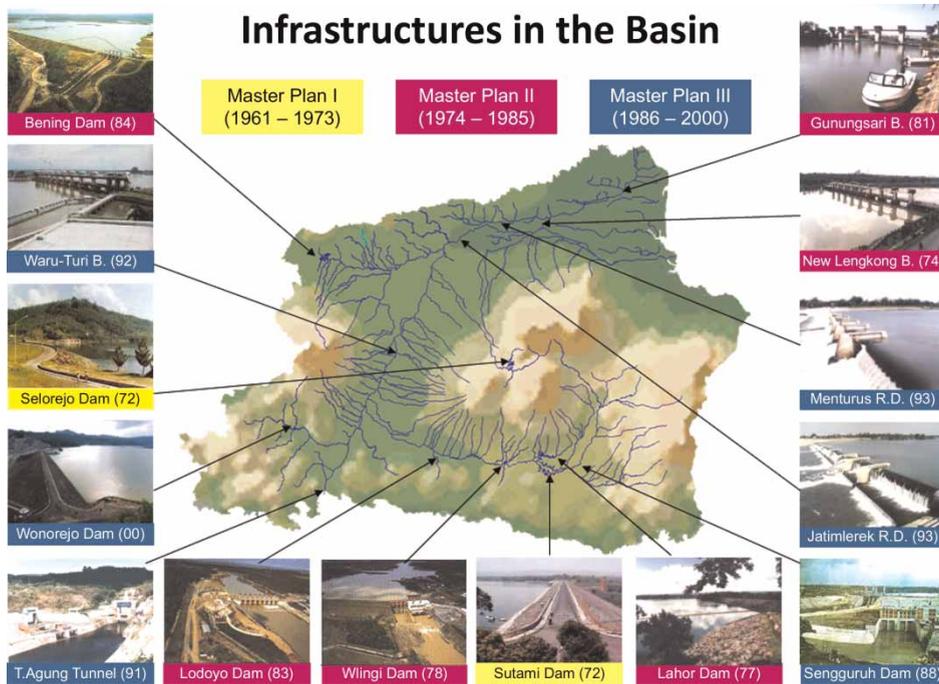


Fig. 3. The main water resources infrastructures in the Brantas River Basin.

Table 1. Summary of direct benefits related to water resources development in the Brantas River Basin.

Benefit	Unit	Before development (1960)	After development (1990)
Flood control	Inundation area	Flooding annually (60,000 ha)	Controlled
Irrigation	Harvest intensity	0.8 times/year	1.8 times/year (225%)
Electricity	Million kWh	170	910 (535%)
Domestic water supply	Million m ³	73	125 (171%)
Industrial water supply	Million m ³	50	115 (230%)
Water quality	Average BOD/year	–	12–16 mg/lt
Infrastructure facilities	Condition	–	Less maintained

BOD = biochemical oxygen demand.

2.2.2. Water resources management (1991–present)

1. Problems after the construction period

The water resources development cycle consists of a brief period of planning (2–5 years), construction (5–10 years), and a longer period of operation and maintenance (O&M) (10–100 years), ending with a brief evaluation stage. The construction phase aimed to realise physical infrastructure as a means to achieving the intended benefits. However, after construction was finished came a period in which the objectives of the project needed to be achieved. The project is currently in the period of O&M of the infrastructures, the longest period of the cycle, which could be up to 50–100 years.

Adequate O&M activities must be performed to maintain the proper functioning of the water resources infrastructures and to ensure optimum benefits at their planned lifetime.

After nearly a 30-year period of construction (1960–1990), i.e., the era of water resources development, the basin encountered specific problems, described below.

- *Institution*: Until the year 1990, there had been no permanent institution in the basin that could perform O&M activities in a conceptual and sustainable manner. The Brantas Project was a temporal institution whose duty was only to carry out the construction and not the O&M.
- *Funding*: The Brantas Project could not carry out the O&M activities as intended and encountered problems in obtaining funding for these activities due to the limited National Government Budget.
- *Degradation of the water resources infrastructures*: The lack of an O&M budget resulted in the degradation of the water resources infrastructures. Insufficient coordination among related agencies complicated the water resources management. This scheme posed a risk of water resources degradation, which in the long run would harm the economic development of the basin.

To realise the development objectives, a permanent and neutral institution was needed, supported by professional staff and with an adequate budget to be able to perform effective operation and maintenance of the systems. The basin then reached the next phase: an era of water resources management moving towards realising the water resources development objectives in the basin.

2. Jasa Tirta I Public Corporation (PJT-I)

After a long and comprehensive assessment, the Indonesian Government decided to develop a pilot scheme of water resources management in a corporatisation approach. The main concept of water resources management is now conducted by a professional institution that applies a balance between prime services principles and accountable corporate norms that are supported by stakeholders.

Jasa Tirta Public Corporation (PJT) was established in 1990, based on the Regulation of the Government of the Republic of Indonesia No. 5/1990 regarding PJT. In 1999, this regulation was replaced by the Government Regulation (GR) No. 93/1999 regarding Jasa Tirta I Public Corporation (PJT-I) to strengthen the organisation and permit its jurisdiction to extend to other basins. The GR No. 93/1999 was recently replaced by the GR No. 46/2010 to suit the implementation of Law No. 7 of 2004 on Water Resources and the GR No. 42/2008 on Water Resources Management and to support business development on drinking water supply system and electric power generation.

The objective and goal of PJT-I is to take part in and support the Indonesian Government's policy and programme on the economic sector and national development in general, and particularly on water resources businesses, as well as the optimisation of PJT-I resources to produce goods and services based on healthy corporation management principles. PJT-I is in charge of rendering water services and managing the assigned infrastructures in the Brantas River Basin. Since 2000, PJT-I has been entrusted to undertake water services and infrastructure management in the Bengawan Solo River Basin (an inter-provincial river basin crossing the Central Java and East Java Provinces).

The tasks and responsibilities of PJT-I are: (1) to conduct water resources services in both basins; and (2) to undertake part of the tasks and responsibilities of the government in managing infrastructure in the Brantas and Bengawan Solo River Basins. Besides the tasks and responsibilities

mentioned above, PJT-I also conducts excellent and adequate public utilisation of water resources to fulfill people's needs for social services, welfare and safety of the public within the working area of PJT-I.

In order to achieve the objective and goal, PJT-I conducts its main business activities in the areas of: (1) bulk water services for drinking water, industry, agriculture, flushing, ports, electric power generation, etc.; (2) power service to generate electricity; (3) generating and distributing electric power and drinking water, performing consulting in water resources fields, heavy equipment rental and water quality laboratory services; and (4) ensuring a clean water supply system. Water resources management functions done by PJT-I cover watershed management, water quantity management, water quality management, flood control management, river environment management, water resources infrastructure management, and research and development supported by data network and information systems. PJT-I maintains a water resources data centre for the society and related agencies concerned. In order to support the sustainability of water resources management, consistent and continuous financial support is required. PJT-I applies a water user fee, in accordance with Water Law No. 7 of 2004, for its services in the basins. The Water Service Fee is applied to commercial water users, i.e., domestic and industry bulk water supply as well as hydroelectric power generation. The tariff is stipulated by the Ministry of Public Works (MPW).

The ultimate results of such performances are greater direct benefits of the water resources management. Comparison of direct benefits after the development phase (1990) and during the management phase (2000 and 2010) can be seen in Table 2. The benefits from water resources development and management in the Brantas River Basin gives very significant support to the economic development in the basin. As measured in gross domestic product (GDP), data from the Central Bureau of Statistics (BPS) show that the gross regional domestic product (GRDP) of the Brantas River Basin in 2003 amounted to IDR (Indonesian Rupiah) 150,630 billion (approximately US\$17.66 billion), which accounted for 59% of GRDP in East Java and 8% of the national GDP.

3. Capacity developments in the Brantas River Basin

The ability of an organisation to perform its roles and functions and to fulfill its tasks and responsibilities is naturally dependent on its ability to build and manage capacity development. The selection of appropriate strategies and methods, organisational culture, leadership and demand, as well as political

Table 2. Summary of direct benefits related to water resources management in the Brantas River Basin.

Benefit	Unit	Before managed (1990)	After managed (2000)	After managed (2010)
Flood control	Inundation	Controlled	More controlled	More controlled
Irrigation	Harvest intensity	1.8 times/year	2.2 times/year	2.2 times/year (122%)
Electricity	Million kWh	910	1,024	1,315 (145%)
Domestic water supply	Million m ³	125	204	315 (252%)
Industrial water supply	Million m ³	115	144	181 (157%)
Water quality	Average BOD/year	12–16 mg/l	3–14 mg/l	3.2–7.5 mg/l
Infrastructures	Condition	Less maintained	Maintained	Maintained

Brantas River Basin = 25% area of East Java Province GRDP Brantas River Basin = 59% GRDP in the East Java Province (as of 2005).

support from the Government, and last but most importantly, the ‘spirit’ of the people within, are the key success factors in the capacity development of the river basin organisations (RBOs).

3.1. Capacity development during the development stage

3.1.1. Long-term perspectives. Capacity development in a river basin context must be based on the long-term perspectives guided by the strategic planning of the basin. In the Brantas River Basin experience, master plans that were developed to guide the infrastructure development fell into place to become the ‘strategic plan’ of the intended goals. As the master plans evolve step by step, taking long-term perspectives into account, capacity development is also continuously updated to adapt to the emerging challenges.

3.1.2. Contracting systems and direct force method for manpower development. The way in which human resource capacity was developed in the context of the Brantas Project can be seen in the evolution over time of the four phases described below (Japan Bank for International Cooperation – JBIC, 2008).

1. Phase I (1961–1964)

These 3 years formed the initial period of infrastructure development within the Brantas River Basin. Two major infrastructures – the Karangates and the Selorejo Reservoirs – were designed and constructed on a war-reparation financing scheme from the Government of Japan. The consulting engineers and main contractors were dispatched directly from Japan and conducted most of the design, execution and supervision works. During that period most of the Indonesian engineers and technicians were able to ‘see’ how the foreign consultants and contractors did their work. The first couple of projects mentioned above were constructed by foreign consultants and contractors on a full contract basis.

2. Phase II (1965–1969)

During this phase, some changes happened. As the infrastructure construction process evolved over time, a number of Indonesian engineers and technicians become more trained. The Government took this opportunity to slowly shift the construction contract to incorporate more Indonesian human resources. The contracting method evolved into an *assistance concept* for consulting services and used *guidance engineers* for the construction works. This was, therefore, the period of ‘trying’ to do the work by themselves with the assistance of a limited number of foreign consultants and guidance engineers. On-the-job training (OJT) with foreign consulting and contracting firms enabled the staff of the Brantas Project to acquaint themselves with the technology and know-how related to project planning and construction. More important water resources infrastructures were constructed at that time.

3. Phase III (1970–1990)

As more human capital evolved around the Brantas Project, and as the Indonesian engineers and technicians become more experienced, a new phase emerged. This was the period of ‘doing’ the design and

construction works, most of them undertaken with Indonesian resources. The water infrastructure construction projects were implemented by a direct force account system. The Brantas Project conducted its own design and construction activities – there was less external contracting than before. The Indonesian engineers and technicians did the work by themselves under the supervision and guidance of a very limited number of foreign consultants and guidance engineers. This was one of the culminations of the human capital gained within the Brantas Project.

4. Phase IV (1991–present)

Upon confirming that most of the technology in the water resources development had been transferred to the Indonesian staff, the Brantas Project reversed its construction policy into a contract system, just like the one employed in the first phase (1961–1964). But this time it was no longer the period of ‘seeing’ but of ‘overseeing’. The Brantas Project supervised all the operations of the project and contracted out only the necessary works to foreign and/or local firms.

The sequential phases above can be summarised as the ‘outsourcing system’ during which time the Indonesians watched and learned (first phase), the ‘force account system’ (second and third phases) and the ‘contracting-out system overseen by Indonesians’ (fourth phase) had shown how the human capacity was developed over time in the Brantas River Basin. The evolution of the human resources capacity, altogether linked to the capacity development in the Brantas Project, is an important story. This is the ‘learning by doing’ process.

3.1.3. Transfer of technology and knowledge. Human capital is developed primarily by learning. In the context of the Brantas Project, this was accomplished by direct apprenticeships and training – the backbone of capacity development. The sequence of contracting systems aimed to allow Indonesian workers to acquire technologies in an efficient and effective way. The major method of knowledge transfer was OJT. The Japanese consultants devoted themselves to transferring technologies to their Indonesian counterparts. They exercised a man-to-man approach of ‘work together, discuss together, eat together and relax together’ which was supported by the force account system. This approach contributed not only to accelerating the transfer of technology, but also to creating a strong trust between them.

It was fortunate that the Brantas Project could assign the local engineers to similar types of projects repeatedly, by which the technology was solidly transferred to them. In this respect, the one and only consultant, NK, played an important role in training the local engineers.

3.1.4. Knowledge development with related universities. Another method of developing capacity took place in the form of formal education. The Brantas Project benefitted from sending its engineers and technicians to pursue further education in related fields. Bachelor and Master degrees were offered to various staff, both in Indonesia and abroad. The establishment of the Faculty of Engineering at the Brawijaya University in Malang City in 1961 was integrally linked to the Brantas Project. Tutors and teaching materials were obtained from the project and the university itself, providing educational opportunities for the employees of the Brantas Project. Thus, manpower training at the Brantas Project and Brawijaya University was uniquely coupled during the second and the third phases, transferring solid and practical knowledge for the mutual benefit of both.

3.1.5. Effective management system. The Indonesian Government authorised the Brantas Project to develop and implement a management system to carry out the project in an efficient and effective manner and to build conducive environmental conditions to achieve better performances. Innovative management and methods were introduced, such as the following:

- Participatory management which encouraged upper, middle and lower level employees to participate in discussions and be involved in decision-making processes.
- Introducing the principle of management by objectives.
- Providing a specific remuneration system, based on performance, with other incentive-based schemes.
- Effective internal control to ensure accuracy and appropriateness.
- An innovative policy of encouraging lower staff and younger employees to provide ideas in solving either managerial or engineering problems.

3.1.6. Driving factors

1. Political commitment and challenges to the Brantas Project

The Brantas Project was given the highest priority in the national development plan, and the government expressed a strong political will to implement these projects. The project was implemented based on a consistent policy of ‘One River, One Plan, One Management’. The Government granted the Brantas Project substantial authority in this matter. Emphasis was placed on rational project management and human capital accumulation through project experience.

One of the distinct policies employed in the execution of the Brantas Project was a force account system (in Indonesian: *swakelola*), meaning that the Brantas Project could directly recruit, hire, train and supervise the workforce and be responsible for the policies governing the wages and salaries. The Indonesian Government gave such authority to the Brantas Project soon after its operation started, and it proved to be a benefit in the sense of engineering but also in terms of capacity development. The Brantas Project was the only project of the Indonesian Government to be given such authority. The Government’s special treatment of and commitment to the Brantas Project was seen as a prerequisite to its successful realisation and gave a strong signal that the Government would not allow it to fail.¹

2. Leadership

For 14 years, from 1961 to 1975, Suryono, the first General Manager of the Brantas Project, devoted all his energy and efforts to the Project. He introduced an innovative management system through a process of trial and error. One of the milestones was the introduction and (consistent) implementation of the ‘One River, One Plan, One Management’ philosophy, which guided the fundamental direction and execution of the Brantas Project.

¹ The late Minister of Public Works and Electrical Energy during the 1960s, Sutami, said that: ‘The Brantas Project is not allowed to fail. It is the flag carrier of the Ministry of Public Works and Electrical Energy in terms of the dam development in Indonesia.’

Further, through his political leverage, Suryono convinced the MPW to implement a force account system for the Brantas Project. His insistence on this seemed too specific under the conditions at that time, but the result in terms of capacity development soon proved to be fruitful for the coming years of development in the Brantas River Basin. The Brantas Project itself became an indispensable institution, and the efforts of all employees were mobilised towards the project's success.

3. The Brantas spirit and culture

The *esprit du corps* of the Brantas Project was later nicknamed the 'Brantas Spirit'. It refers to a characteristic blend of ambition and desire to achieve the project's goals, an openness to accept new things, a willingness to share and accept opinions and experiences, the need to learn, responsibility, ethics, integrity, initiative, pioneering, and a spirit of solid teamwork (Kerukunan Keluarga Eks Proyek Brantas, 2004). The spirit of Brantas could be condensed to the 'Three Cs' (i.e. Creative, Cooperative and Confident) spirit toward achievement of the goal (the Project implementation) successfully (Hideki Sato, 2001).

4. Incentive schemes

It is said that human resource development cannot be achieved unless the management offers work incentives and unless serious-minded responsibility is felt and put into effect by the employee. It was fortunate that the Brantas Project was able to satisfy these conditions. The Brantas Project paid much higher salaries to its employees on the basis of job evaluation and merit than those of other project offices in the country – thanks partly to the force account system and partly to the cash income obtained from raw water sales.

3.2. Capacity development during the management stage

In the first 5 years of its establishment, PJT-I faced a new challenge. Most of the key staff came from the Brantas Project which, as a state-owned enterprise, had a different corporate working culture. The organisation needed to change its culture from a bureaucratic to an entrepreneurial one, and make the shift from being a cost centre to obtaining funds from water service fees in order to implement its tasks and responsibilities.

3.2.1. Long-term planning. PJT-I prepared its vision for the year 2020 in 1993. It comprised stages of PJT-I development and policy directives to implement. The first 10 years (1991–2000) was a stage of consolidating and positioning, the second 10 years (2001–2010) comprised the first development stage, and the third 10 years (2011–2020) is the second development stage. Based on the current conditions and challenges, in 2010 PJT-I reformulated its vision by broadening it to the horizon of 2025, to be 'one of the best RBOs in Asia Pacific by 2025'. Based on this long-term vision, PJT-I had to prepare a 5-year strategic plan. The plan described the capacity of the organisation to be developed.

3.2.2. Strategies. Basic strategies to achieve the vision of becoming one of the best RBOs in the Asia Pacific region by 2025 was formulated in three key success areas: knowledge-driven organisation, a dynamic team and conducive working conditions (Figure 4) (Subijanto, 2010).

Three Key Success Areas and Leadership in Water Resources Management for River Basin

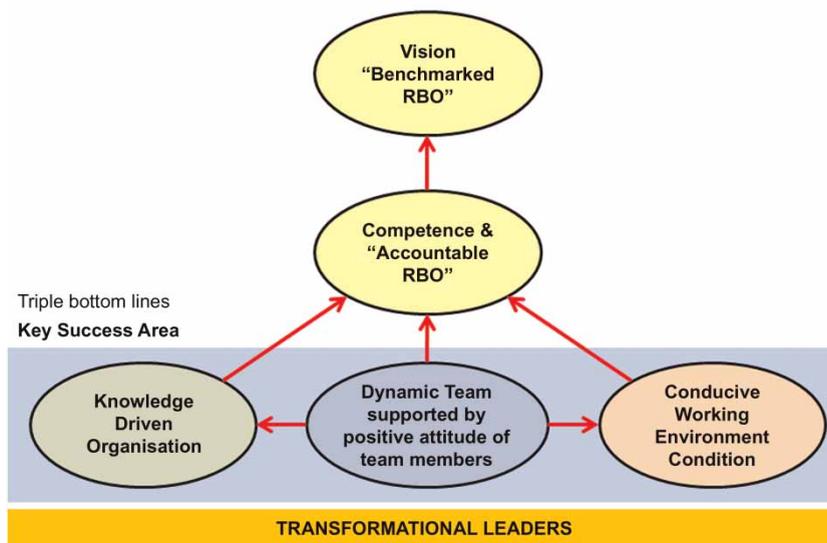


Fig. 4. Three key success areas in water resources management institution.

1. Knowledge-driven organisation

Acquisition, development and maintenance of knowledge are cross-cutting tasks of the RBO, in pursuit of high-level performance. The knowledge-driven RBO has a knowledge-based corporate culture, is supported by knowledge workers, produces knowledge-based products and services, optimises the intellectual modalities of the organisation, maintains a conducive environment for the development of knowledge, is a learning organisation, and adopts knowledge developed in its business processes and service delivery. Furthermore, PJT-I's motto is: *growing to lead* (in other words, trying to always be one step ahead of the others and to carry a spirit of innovation).

2. Dynamic team

In the perception of PJT-I, the key to achieving the organisation's goals is the extent to which the leaders can mobilise their teams and contribute positively to the team's thinking, feelings and eagerness to move forward together in planning, implementation, monitoring and corrective actions. Therefore it is considered important to develop a dynamic leadership team. The leadership team works on developing loyalty of the employees, creating ownership and pride in the organisation, and stimulating a positive attitude in each individual team member. In sum, this intention is credited to an Indonesian expression: *berpadu daya, bersatu karsa, gapai cita bersama* (synchronise the efforts, unify the process and be eager to achieve the goals). This motto is in line with the dream of the first General Manager of the Brantas Project, the late Suryono, that the river basin organisation in the Brantas River Basin shall be an institution that unites its employees in a dynamic team for a common vision.

3. Conducive working conditions

A supportive corporate working condition is needed for continuous improvement and to guarantee the quality of products and services. It is the enabling factor in promoting innovation and better performances. It includes the following:

- Clear and documented policies.
- Open management, providing anyone with opportunities to share their views and ideas.
- Consistent implementation of Standard Operating Procedures (SOPs) as part of the management system.
- Minimising the occurrence of decisions that are inconsistent with corporate written rules and policies.
- Promotion of knowledge development through periodic knowledge management sessions to share knowledge and experience with internal and external resource persons.
- Code of conduct as a way to provide rules of the game for the implementation of jobs and tasks.
- Incentives for innovation, revenue and profit achievement.
- Occasional coffee mornings to facilitate open discussion and collect input directly from staff members.
- Human resources development policies and practices including standards for competencies and a performance-based salary system (merit system).

3.2.3. Quality management system (QMS). The Brantas River Basin under PJT-I is the first ever river basin in Indonesia (and in all of Southeast Asia) to apply a QMS for its operation in order to continuously improve its management. PJT-I received ISO 9001 International Certification in 1997 for its aspects of design, operation and maintenance of water resources and infrastructure. The certification must be renewed every 2 years. The SGS International Certification Services periodically verify the consistency of the quality assurance system implementation. The system has been implemented continuously to ensure stakeholder satisfaction through the continuous improvement of the system and responsive reactions to stakeholders' complaints. Thanks to the commitment of the management and staff, PJT-I has consistently been awarded the ISO 9001:2000 certificate for the quality assurance system up to now. As reflection of the QMS, PJT-I introduced the motto of 'Identity by Quality'.

After nearly 15 years of implementing the QMS, it is clear that this instrument can serve to achieve better and more effective water resources management, in accordance with the global management standards: to improve company performance, efficiency, effectiveness and corporate management consistency; to improve employee integrity; to optimise time and resources usage; to improve employees' capacities and levels of responsibility; and to create better communication and improvement in information quality.

The experience is clearly positive. A well-documented, transparent and predictable operation has generated improved performance and higher stakeholder satisfaction. These are considered to be management modalities that provide responsive actions to stakeholders' complaints, consultations on water services (as a basis for abstracting water service fees), development of better communication methods with stakeholders and shareholders, regular meetings at the operational (division) level with certain customers and important users, customer satisfaction surveys, and annual awards to water users who have actively participated in water resources management. This programme is meant to stimulate customers as well stakeholders, and to draw attention to the effective exploitation and preservation of water.

Benefits of a better management quality are seen in the form of improvements to the operational aspects of the company (better working methods), improvement in company performance, fewer stakeholder complaints and these being better handled and anticipated, main tasks being undertaken more efficient and effectively, a better relationship between stakeholders and beneficiaries, easier implementation of good corporate governance (GCG) principles, and the project being entrusted as a pilot concept for water resources management at the basin-wide perspective in Indonesia.

3.2.4. Networking and knowledge management. Networks, professional associations and information technologies are becoming powerful tools of capacity development for individuals and institutions. For this reason, PJT-I needs to actively participate in networking and the professional association and must use technology information to develop its capacity. Nowadays, PJT-I is a member of the Network of Asian River Basin Organizations (NARBO), the International Network of Basin Organizations (INBO), the Indonesian Committee on Large Dams (INACOLD), the Indonesian Hydraulic Engineers Association (*Himpunan Ahli Teknik Hidraulik Indonesia – HATHI*), the Hydrologic Society of Indonesia (*Masyarakat Hidrologi Indonesia – MHI*) and other networking associations.

Twinning programmes with other RBOs (Japan Water Agency and K-Water of the Republic of Korea) have been implemented through staff exchanges, joint seminars/workshops, etc. Periodical knowledge sharing sessions are held to discuss and share opinions on specific issues. After attending seminars, workshops and training events, the officials and employees are expected to share their knowledge and offer recommendations to the management on what lessons to adopt or what kind of initiatives to explore, develop and implement.

3.2.5. Focus group discussions. The management of PJT-I has also introduced focus group discussions (FGDs) to discuss and provide solutions to specific problems related to the engineering and management aspects undertaken by the RBO. FGDs have been held to produce input to improve processes (revising manuals, updating standard operation procedures, introducing applied technologies, etc.). Furthermore, monthly management review meetings are conducted at each unit within the organisation, to review and analyse problems related to the engineering and management aspects of water resources within the river basin organisation. These meetings provide constant input to the FGD. Active participation and contribution are the most important aspects in gaining effective results in improving the performance of the organisation. These examples illustrate the continuous improvement principle of the QMS.

3.2.6. Driving factors

1. Political support and challenges

As a pilot in the development and implementation of corporatisation in water resources management, the Government of Indonesia supports the continued success of this pilot programme by issuing Government Regulations on PJT-I as a legal basis for promoting PJT-I improvements. The MPW, the Ministry of State-Owned Enterprises and Provincial Governments have their representatives in the Supervisory Board of PJT-I to facilitate the speed and consistency of required political support decisions.

After a long period of discussions, the Government reached the political decision to make corporatisation of water resources management the end goal of the institutional set-up in the river basin. During the 1st NARBO IWRM Leadership Retreat, held at PJT-I from 20–22 June 2011 and

attended by more than 30 Asian water leaders, the Minister of Public Works stated in his keynote address:

‘Indonesia may share its experience in dealing with the two types of river basin organisations, i.e., public type and corporate type RBOs. We are embarking on a process to move the public type of river basin organisations into quasi-corporate river basin organisations. If in the future the financial aspect of the quasi-corporate river basin improves, they will be transformed into corporate-type river basin organisations.’

On other occasions, in front of PJT-I staff and officials in 2010, the Minister said:

‘I do apologise for not visiting PJT-I to inspect the Brantas River Basin in the last 10 years. Why? It is all due to my trust in PJT-I. You (PJT-I) told me that you would like to be one of the best RBOs in Indonesia by 2015, in South East Asia by 2020 and in Asia Pacific by 2025. Don’t you realise that PJT-I is already the best RBO in Indonesia now? I think that PJT-I can reach the target in advance.’

These statements are examples of the political commitment and the challenges set by the Government for PJT-I that will strengthen its spirit for achieving the success.

2. Leadership

Pro-active RBO leadership is one of the key requirements of responsive and efficient basin-level integrated water resources management (IWRM). RBO leaders should have great vision, thoughtful direction, the best means as well as the foresight to employ managers and staff to carry out the projects that have to be done. This involves:

- *Vision*: a clear, distinctive and (in some details) specific vision of the future, with a view to advances in technology and the social and political agenda.
- *Sincerity*: the appearance of honesty, integrity, trustworthiness and confidence.
- *Struggle*: a tough spirit in order to bring about change.
- *Charisma*: the ability to generate enthusiasm.
- *Persuasion*: the ability to motivate.
- *Responsibility*: commitment to any activity performed and accountability for its consequences.

Generating change requires transformational leaders who can help the RBO to develop a new and charismatic vision. This must go hand in hand with supporting existing teams and individuals, inspiring and motivating the staff and promoting their confidence, and offering guidance to the organisation. However, leadership in a river basin organisation also requires the capacity to institutionalise changes over time, to use innovation and creativity to solve engineering and management problems related to water resources issues, and to facilitate adequate policies and resources to allow better implementation by stakeholders in the basin.

During the First [NARBO Leadership Retreat \(2011\)](#), the former President Director of PJT-I shared his experiences:

‘If you wish to bring your organisation to a better position, you should try to have new challenges. I always give new challenges to my staff. This requires a change of mindset, and I have to change myself. The leadership of corporate RBOs has to create conducive working conditions. Corporate RBOs should (i) have clear and documented policies; (ii) establish ‘open management’ to allow staff at any level to share their views and ideas; (iii) maintain the code of conduct as a ‘rule of the game’ in staff performance of tasks and responsibilities; (iv) maintain an effective and dynamic working team; and (v) develop appropriate incentives towards innovation.’

To realise this challenge, PJT-I needs to develop the capacity of individual staff members and of the organisation as a whole.

3. Incorporating the ‘Brantas Spirit’ in the corporate culture

To be a champion of river basin management, PJT-I has embodied the notion of the ‘Brantas Spirit’ in its corporate culture. Fortunately, many staff members of PJT-I originate from the Brantas Project. They have experience with the Brantas Project and are familiar with the concept of Brantas Spirit. PJT-I has easily incorporated the Brantas Spirit in its corporate culture ([Bhat et al., 2005](#)). stimulating innovation, initiative, integrity and ownership, among others. Behaviours that advance the organisational challenges have also had to be explored, developed and embedded in the corporate culture (demand-driven). The appropriate spirit for gaining the trust and satisfaction of stakeholders has been formulated as well (professionalism, neutrality, fairness, responsiveness and honesty). The corporate culture of PJT-I is abbreviated with “PINTU AIR” (the Water Gate in English) as described in [Box 1](#).

Box 1. PJT-I’s corporate culture

The PINTU AIR (water gate principle)

P Professionalism

I Innovation

N Neutrality

T Tanggap (responsiveness)

U Uswah (being a role model)

A Adil (fair and equitable services)

I Ikhlas (sincerity, honesty)

R Rasa memiliki (ownership)

4. Incentives

Experience in developing and implementing incentive schemes has proven that appropriate incentive schemes promote capacity development initiatives and achieve better performances. Incentive schemes in form of performance-based salaries have encouraged the river basin organisation's employees to dedicate their knowledge and capabilities, as well as their loyalty, towards the organisations' objectives. PJT-I apply some incentive schemes as part of our performance-based salaries system. For example, quarterly incentives and end-of-year incentives as mentioned in [Box 2](#).

Box 2. Performance-based salaries at PJT-I to promote employee performance

Quarterly incentives: Based on the organisation's revenue and achievement, the management provides bonuses to its employees in related units as an additional percentage to their monthly salary. End-of-year incentives: Based on overall corporate achievement, the management awards additional bonuses to all employees in order to endorse achievement and cost efficiency during the financial year.

4. Benefits resulting from capacity development of the Brantas River Basin institutions

4.1. During the development era

Water resources development in the Brantas River Basin started in the early 1960s as part of a development scheme to modernise Indonesia after the prolonged independence struggle. The Brantas River Development Project (abbreviated as the Brantas Project) was initiated with a mandate to address basic water problems (flooding and droughts) within the basin. However, it turned into a large-scale basin development initiative and became part of the future leap in providing better services for the welfare of the people.

The indirect results of the Brantas Project can be termed as region-wide and nation-wide benefits in human resource development, economic growth/welfare, poverty reduction and income distribution, people's mindset, and the replication of similar projects all over Indonesia. As one of the unique feature of these indirect results, human resource development took place thanks to the unique apprentice and training system used within the Brantas Project. In particular, the so-called force account played a remarkable role in producing 7,000 qualified and well-trained engineers, planners, and technicians through the training on the Brantas Project site. It is evident that the transfer of technology took place on a large scale. This technology transfer was achieved through manpower development and quality training methods. Their expertise and experience were gained through direct practice in designing, executing and evaluating the infrastructure development activities of the project. The experiences of the Brantas Project graduates had an additional impact through replication of the Brantas infrastructure projects. A significant number of the graduates have spread out all over the country since the middle of 1970s and have duplicated the Brantas Project successfully in different locations around Indonesia. They have contributed to laying the foundations for the economic development of the country.

In addition, the Brantas Project produced a number of institutions during its 40 years of development ([Figure 5](#)). Three organisations were spun out of the Brantas Project: namely Indra Karya Consulting

Institutional Development in the Brantas River Basin

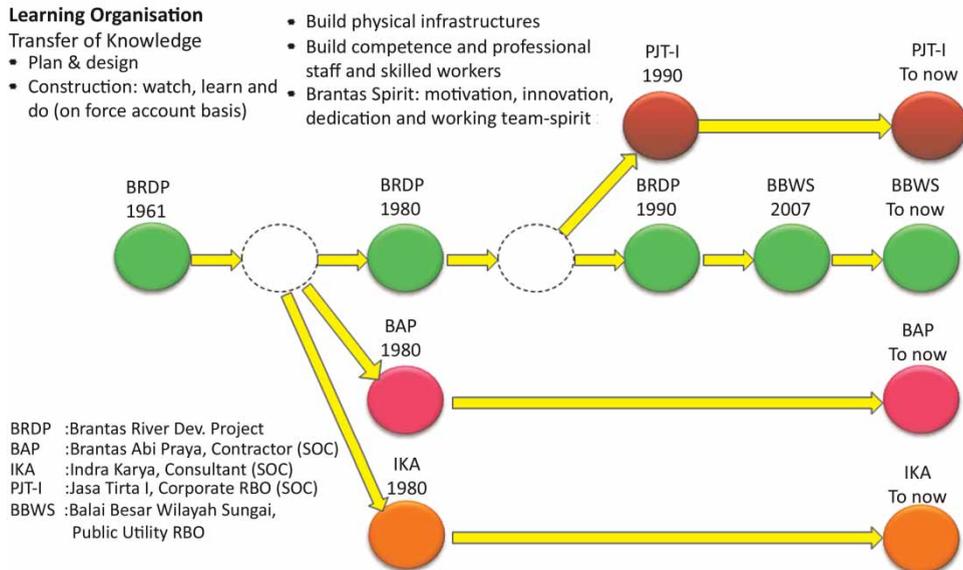


Fig. 5. Institutional developments in the Brantas River Basin.

Engineers (1980), an engineering consulting company; Brantas Abipraya (1980), a general contracting company; and PJT-I (1990), the river basin organisation in the form of a public corporation. These organisations absorbed 500, 519 and 439 employees from the Brantas Project, respectively. The total number of employees (approximately 3,000) in 1985 decreased to 1,048 by 1990. Those trained Brantas engineers, planners and technicians became engaged in the planning and construction of the physical structures of the Brantas Project as well as those in other parts of Indonesia. Their contribution to nation building lasted for a decade or so after the third system was introduced in 1991. This was a major contribution to human resource development, one of the long-term national development objectives.

Another aspect of the spin-off influence of the Brantas Project is its role in developing the Faculty of Engineering at the Brawijaya University in Malang City, where the Brantas Project was located. The faculty was established in 1963 in close collaboration with the Brantas Project. Suryono, the first General Manager of the Brantas Project, played the central role in this and was himself appointed as the Dean of the Faculty from 1963 through 1982. Later on, in 1976, the Faculty of Engineering of the Brawijaya University established the Water Resources Engineering Department, whose the first head, Husni Sabar, was working for the Brantas Project as the Planning Manager. During those early days, the Brantas Project was the cradle for the Faculty of Engineering. The Brantas Project engineers gave lectures to supplement the shortage of engineering lecturers, thereby supplementing the faculty with their field experiences from the Brantas Project.

The mutual trust created between Japanese resident consultants and engineers, employees of the Brantas Project and local people of the Brantas Basin allowed modern ways of thinking and behaviour to penetrate into the minds of the local people. The economic and social modernisation expedited owing to this change in the people’s mindset. The Brantas River Basin Development is said to be the flag symbol of the successful cooperation between Japan and Indonesia on water resources development.

4.2. During the water resources management era

PJT-I was established in response to the Indonesian Government's developing a pilot scheme for corporatising water resources management. The main concept of this approach is that water resources management is conducted by a professional institution that applies a balance between prime services principles and accountable corporate norms that are supported by stakeholders. The objective and goal of PJT-I is to support the government policy on strengthening the water resources sector.

Almost two decades after its establishment, PJT-I has been able to be a pilot for developing a management system and technology for advanced water resources management. PJT-I performance shows that integrating the purposes of water resources management into a corporate setting can be gradually achieved.

4.2.1. Performance in water resources management. PJT-I has played a significant role in the implementation of IWRM in the basin. Some of the water resources management results are as follows:

- A reliable water resources system and activities supported by regional legislation.
- Better coordination, increased awareness and stakeholder participation in the decision-making process based on mechanisms agreed upon by the water resources committee of the basin. The committee consists of 44 members, divided evenly between governmental and non-government agencies (user associations, universities, etc.).
- The fourth Master Plan of the Brantas River Basin relies on coordination between all concerned water resources agencies as a means of reaching agreement on inter-sectoral water allocation.
- Water allocation is based on water demands and projected water availability. Making the water resources committee of the basin responsible for water allocation is expected to reconcile inter-sectoral water allocation disputes and lead to fair and transparent results.

4.2.2. Corporate performance. As a state-owned company, PJT-I management is subject to various types of audits and control. Management performance of the corporation is judged based on financial criteria as well as good corporate performance and management methods. Some achievements in corporate terms are the following:

- Commitment to consistently applying QMS since 1997 in the Brantas River Basin. Many aspects of water resources management and effective water governance were developed and evolved in the basin. This achievement gave the Indonesian Government the intention of scaling-up PJT-I to be a nationwide water resources management body to manage national strategic river basins in the future.
- Water service fees have evolved over time: the tariff applied in 2012 was IDR 149.37/kWh (for electricity), IDR 112.00/m³ (domestic bulk water) and IDR 221.07/m³ (industry). These are increases since 2001 of 10.5 times, 3.2 times and 4.2 times, respectively (Figure 6).
- Incremental increases of water use and water service fees in the Brantas River Basin can increase the water service revenues. Between 2001 and 2012 revenues increased by 8.8 times, from IDR 29.1 billion to IDR 256.1 billion. On the other hand, allocation of direct O&M activities has also increased 7.4 times, or about IDR 27.9 billion in 2001 to IDR 206.8 billion in 2012, which translates to a nearly 75% cost recovery rate for O&M (Figure 7).

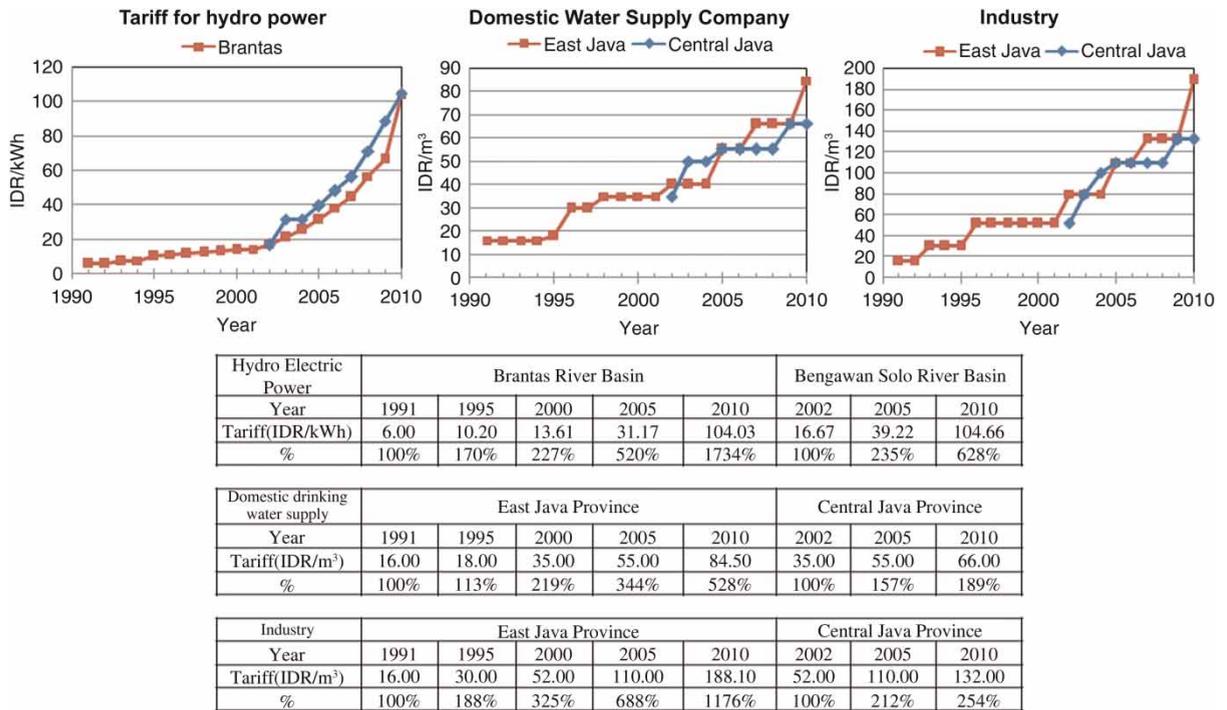


Fig. 6. Tariffs for water resources management service for PJT-I’s working area.

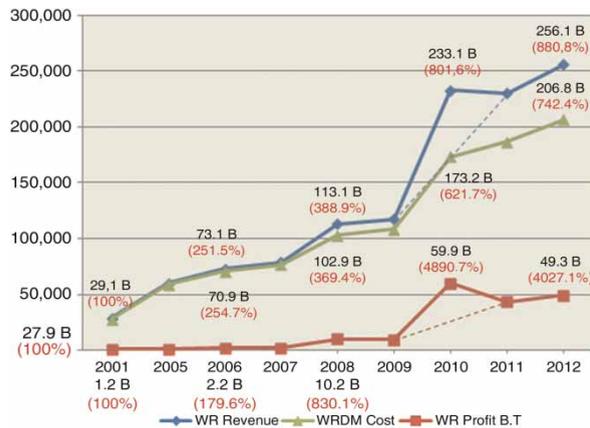


Fig. 7. Revenues of water resources business.

- Better corporate performance, based on the assessments of external auditors assigned by Ministry of State-Owned Enterprises. The following tables show the company performance scores and key performance indicator (KPI) management performance scores from 2005–2010 (Table 3).
- Receipt of the highest score of NARBO–RBO performance benchmarking through peer review by other RBOs in 2009. PJT-I has become one of the RBO benchmarks in the region (Figure 8).

Table 3. Company performance of PJT-I.

(a) The company health performance score of PJTI (2001–2010)										
	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Score	93,9	91,5	90,0	91,0	93,0	92,3	94,6	95,0	95,6	97,3
Health	Sehat									
Level	AA									

Note: Sehat = Healthy

(b) The assessment of management performance, Key Performance Indicator (KPI) of PJT-I start by the letter of State Owned Company Minister No. 676/MBU/2004 on 22 December 2004, the performance of the year 2005–2010 as follows:							
	2005	2006	2007	2008	2009	2010	
Score	120,0	134,4	111,4	118,4	122,5	122,6	
Performance	Baik ~ A2	Baik ~ A3	Baik ~ A2	Baik ~ A2	Baik ~ A2	Baik ~ A2	

Note: Baik = Good

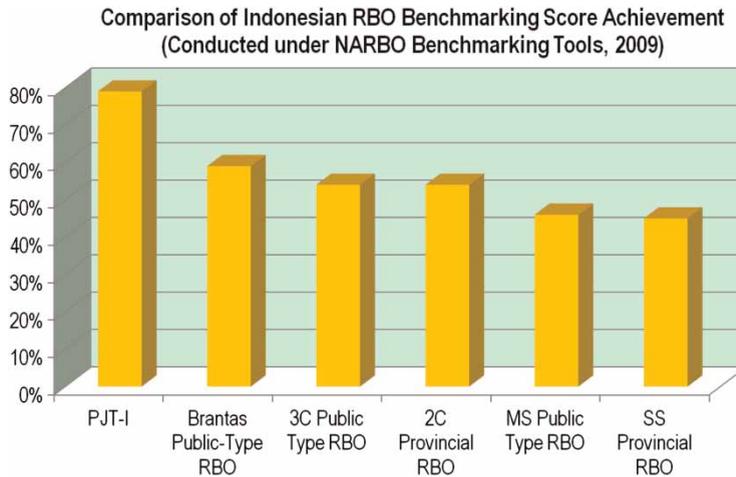


Fig. 8. Result of NARBO performance benchmarking for RBOs.

- The progressive block system tariff policy for industrial water users has been a good example for promoting the efficient use of water in the basin. Many large industrial customers (such as sugar cane factories) apply recycling technologies to reduce their water abstractions.
- Active participation in the NARBO since its establishment at Batu–Malang, the home of PJT-I in 2004. Nowadays the former President Director of PJT-I (2007–2012) acts as Vice President of NARBO (2010–2013). PJT-I has also become one of the benchmarked RBOs in the Asian region, under the NARBO benchmarking approach.

5. The way forward

In the global context of putting in place an IWRM approach to face the current and future challenges in water resources, river basin management can be seen as a way to solidify IWRM principles, with a

river basin organisation at the core of the institutional arrangement. To be successful with river basin management, the RBO has to have the necessary knowledge, data and information about water and water-related issues. Based on an identification of capacity development needs, the RBO has to put in place a capacity development plan in line with the situation of the basin and the strategy adopted by the RBO. The plan should cover technical and non-technical needs, and include individual and institutional capacity building (Valensuela, 2009).

Moving forward, PJT-I realises that change in the basin and overall circumstances must be addressed in a strategic way. Capacity development is considered an important issue within the organisation, as the requirement to improve the effectiveness, efficiency and sustainability of individuals' performances will be the primary driver of future water resources management.

First of all, it is necessary to obtain a strategy that can unite the best practices learned from activities everywhere. Three important aspects in this strategy are: (1) to create a knowledge-driven organisation; (2) to develop dynamic teamwork practices, with prime employees at the core in order to execute and deliver the organisation's objectives; and (3) to create supportive corporate working conditions for continuous improvement and to guarantee the quality of products and services.

In a knowledge-driven organisation, the acquisition, development and maintenance of knowledge are cross-cutting tasks of the RBO, in pursuit of its performance goals. For dynamic team development it is necessary to create loyalty, ownership, and pride in the organisation, as well the positive attitudes of each individual team member. These tasks support the important objective of developing the capacities of a river basin organisation, as has been experienced by PJT-I. PJT-I is now aiming to develop itself by means of utilising the three important aspects described above. This is being achieved through the use of selected management tools.

To support knowledge development among employees, the management applies a forward-looking approach, constantly investing in education, training and on-the-job practices, and coupling these with a platform of information sharing based on the best available technology (portal management, learning sites and on-line tutorials or manuals). Employees are subject to a certain degree of knowledge exposure throughout their routine assignments.

In order to develop dynamic teamwork with prime employees at its core, the management has improved recruitment methods and introduced new apprenticeship/on-the-job experience to integrate capabilities and strengthen the commitment of employees. This effort is being consistently implemented and will be equipped with a talent management system, which is now being developed.

Finally, to create a supportive corporate working condition, continuous improvement is drilled throughout the system. Endorsement of management tools like the ISO-based QMS is a must, and improvement of the system is regularly cross-checked through audits and the application of a balanced-scorecard approach, good corporate governance principles and other approaches.

6. Conclusions

1. Capacity has been defined as the ability of individuals and organisations to perform functions effectively, efficiently and sustainably. Thus in the water resources sector, capacity development can be defined as a process of transformative change that takes place not just in individuals but in the institutions – the RBO – in a continuous and complex process. Effective

- capacity development should be based on long-term perspectives and guided by strategic basin planning.
2. Achievements of organisations to perform their roles and functions and to fulfill their tasks and responsibilities is very dependent on the organisation's ability to develop and manage its capacity building; thus it can be seen that capacity development programmes are more successful and are more likely to be sustainable when they respond to an internal initiative driven by organisational challenges – both internal and external – such as those the Brantas Project faced from the 1960s until its transformation into various specific institutions, among others the PJT-I, which has been the responsible organisation in the river basin since the 1990s.
 3. The Brantas Project, with its spirit, the 'force account' system and sequence of contracting systems, played a remarkable role in producing qualified and well-trained engineers, planners and technicians in the Brantas River Basin through OJT at the project site.
 4. As an RBO that has profited from the capacity development stages since the Brantas Project era in the 1960s, PJT-I constitutes three bottom-line key success areas: (1) becoming a knowledge-driven organisation; (2) having a dynamic team; and (3) maintaining a conducive working environment condition supported by strong leadership and appropriate corporate cultures to lead the organisation forward to the next level. PJT-I's commitment to providing the best services and to achieving stakeholders' satisfaction increases user's willingness to pay, which promotes the sustainable financing of water resources management in the basin.
 5. The achievement of PJT-I during the management era gave the Indonesian Government the intention of scaling-up PJT-I to be a nationwide water resources management body to manage national strategic river basins in the future.
 6. Looking forward, the key success factors of the capacity development of the RBO include appropriate strategies and methods, strong and positive organisational culture and leadership, being demand driven and receiving political support from the Government, and last but not most importantly, to develop the 'spirit' (*esprit de corps*) of the employees and staff within.

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