

Toward Efficient and Sustainable River Basin Operational Services in Indonesia

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(Left) Jatiluhur Dam, PJT II; (Right) Wadaslintang Dam, PJT I.

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TERMS, ACRONYMS, AND ABBREVIATIONS

Air	Water	MOU	Memorandum of understanding
Balai	Institution	MPW	Ministry of Public Works
Balai Besar	Central basin management institution	NWRC	National Water Resources Council
Balai PSDA (BPSDA)	Balai Pengelolaan Sumber Daya Air, provincial river basin (territory) management unit located within the provincial water department	O&M	Operation and maintenance
BBWS	Balai Besar Wilayah Sungai, national river basin (territory) management organization, a unit within the DGWR at echelon 2B level	PAM	Perusahaan Air Minum, city water supply agency
BJPSDA	Water resources management services fee	PDAM	Perusahaan Daerah Air Minum, urban/town water supply agency
BLU	Badan Layanan Umum, a not-for-profit public service agency	Pengelolaan	Management
BWS	Balai Wilayah Sungai, national river basin (territory) management organization, a unit within the DGWR at echelon 3 level	PJT I/II	Perum Jasa Tirta I/II, River Basin Bulk Water Supply Corporation I/II
BUMN	Ministry of State Owned Enterprises	PLN	Perusahaan Listrik Negara, Indonesian state-owned power company
DAS	River basin (a number of which make up a river territory)	PLTA	Pembangkit Listrik Tenaga Air, hydroelectric power
Dewan	Council	Pola	River basin (territory) strategic plan
DGWR	Directorate General of Water Resources, Ministry of Public Works	PP	Peraturan Pemerintah, government regulation
Dinas	"Service," used to denote government agency or unit	PSDA	Pengelolaan Sumber Daya Air, water resources management
Dinas PSDA (DPSDA)	Provincial water resources management agency. The territories of all provinces in Java are within the management of such river basin management units. Outside of Java this is called regional technical implementing unit (UPTD), which includes the relevant public works responsibilities (e.g., transportation, human settlements).	PU	Pekerjaan Umum, public works
Dinas PSDA (District)	District water resources management agency	RBO	Balai PSDA and/or B(B)WS, river basin (territory) organization
Dinas PUP	Provincial public works department	Rencana	River basin (territory) masterplan
Dit.	Directorate	River territory	The unit of river basin management in Indonesia for both national and provincial levels. River territories usually comprise many unconnected river basins on account of the basins' small size, short lengths, and multiple direct outlets to the ocean.
Gol	Government of Indonesia	SDA	Sumber Daya Air, water resources
IPP	Independent power producer	SPAM	Sistem Penyediaan Air Minum, water supply systems
IRBM	Integrated river basin management	Sub-dit	Sub-directorate
IWRM	Integrated water resources management	Sumber Daya	Resources
Kabupaten	District	Sungai	River
KSO	The detailed role-sharing agreement (Kerja Sama Operasi) that is an addendum to the MOU	TKPSDA	Tim Koordinasi Pengelolaan Sumber Daya Air, National Basin (Territory) Council, with 50/50 government and nongovernment membership
		WRM	Water resources management
		WS	Wilayah Sungai, a river basin territory comprising several river basins, used interchangeably with river basin in this report
		WUA	Water user association

EXECUTIVE SUMMARY

OBJECTIVES AND SCOPE OF THE STUDY

Since the introduction of the Water Law in 2004, national river basin management in Indonesia has been carried out by 30 public river basin management organizations (RBOs), called either Balai Besar Wilayah Sungai(s) (BBWSs) or Balai Wilayah Sungai(s) (BWSs); the two are referenced together here as B(B)WSs. These national government agencies fill both regulatory and management functions, as well as undertaking construction, operation, and maintenance of river infrastructure and irrigation systems larger than 3,000 hectares. Provincial water agencies also provide water resource and river basin management in provincial basins and basins of national river territories, in coordination with the national river basin agencies.

Over the past several decades, arrangements were introduced in several major basins within Java, where two state-owned corporations called Perum Jasa Tirta(s) (PJT) were created through special government regulations to manage major national government-owned infrastructure. Recently, the corporations have expanded their geographical areas of management to additional river basins in Java and Sumatra by taking over operation and maintenance (O&M) functions for the major water infrastructure from the relevant B(B)WSs. In such cases, the B(B)WSs retained their water resources management roles, as well as responsibility for O&M of the remaining, and usually smaller, river infrastructure. Unlike the B(B)WSs, the PJTs are profit oriented and are allowed to charge for bulk water services to hydropower stations, water utilities, and non-agricultural industries.

The central Directorate General for Water Resources (DGWR) under the Ministry of Public Works in Indonesia asked the World Bank to support a study that would assess the current approaches to river basin operations and recommend changes to rationalize the functions and enhance the effectiveness of the various river basin organizations, particularly the approach that currently utilizes the PJTs as the infrastructure O&M operators.

Given budgetary constraints and the need to improve river basin operational services, the government of Indonesia is concerned about the effectiveness of existing public sector arrangements through the B(B)WSs and is considering

extending the PJT model much more widely to additional river basins. To this end, the DGWR is seeking to increase its understanding of how the current PJT model is working and to identify policy options for strengthening the institutional and financial sustainability of the approach.

Focusing primarily on the service delivery of bulk water supply and the O&M of river infrastructure in the national basins where the two corporations (referred to hereafter as PJT I and PJT II) operate, the study team carried out the following major tasks:

- a. Review of current arrangements in terms of roles and responsibilities and identification of key issues, including review of the division of responsibilities for river basin water resources management and the related service delivery among the different institutions;
- b. Operational and financial analysis of the PJTs, including identification of current levels and sources of revenue and assessment of financial sustainability, and review of the proposal for PJT I to expand into additional river basins;
- c. Assessment of the overall PJT model in light of domestic and international experiences; and
- d. Generation of policy recommendations, based on the analyses and assessments, for improving the efficacy of operational management practices and for replication of the strengthened approach.

An interagency consultation meeting, convened on June 10, 2014, and chaired by the director general of the DGWR, noted the following, which was reiterated during the stakeholder consultation meeting held in Jakarta in April 2015:

- a. The government welcomes a study on a viable business model for river basin management. The model should be sustainable and not burdened with too many tasks that will weaken the organizations' capacity to deliver; rather, it should focus on what they should do best: river basin management, provision of bulk water services to users, and river infrastructure maintenance; and
- b. In conducting the study, the many other aspects of river management should be considered, such as overall basin management; roles of the regulator and service

provider; infrastructure O&M; role-sharing among river basin organizations with the same or overlapping roles or tasks; relationships and coordination with institutions at the provincial and district levels; and the possibility for replication of the new business model for other river basins.

Because of data constraints, the team was unable to complete the full scope of the tasks, particularly for the PJT I expansion proposal review. The feasibility study produced by PJT I for expansion into new river basins provided only summary financial and operational information, which was insufficient for assessing the efficiency of the proposed expansion. While the study did reveal a financially sustainable operation, it could not go beyond this basic assessment to evaluate the effectiveness of the operation.

Data constraints also limited assessment of the operational performance of both the B(B)WSs and the PJTs. Efforts to identify O&M unit costs and maintenance plans for important river and water infrastructure of existing service areas were inconclusive. Without an extensive investigative review, a full assessment of the adequacy and effectiveness of the operation and maintenance functions was not possible, beyond what could be revealed by the audited financial reports, limited official documents and publications, and discussions with a number of entities concerned. Nonetheless, these data limitations became part of the important findings, in response to which policy options have been recommended.

CURRENT ARRANGEMENTS FOR RIVER BASIN MANAGEMENT IN INDONESIA

Indonesia is a mountainous country comprising many and mostly small islands, where most river basins are small with steep gradients. High rainfall amounts and other natural conditions, such as volcanic activity, produce frequent occurrences of flooding, high levels of soil erosion and sedimentation, and pronounced wet and dry periods, leading to seasonal water shortages in many parts of the country.

Given the unique characteristics of the country's topography and climate, a system of "river basin management" has been established that combines a number of independent river basins into larger administrative "river territories" called Wilayah Sungai(s) (WSs). Altogether, 131 such territories are under central, provincial, or district control.

The central government, under the overall direction and management of the DGWR, controls the more significant river basins, which total 63 WSs. These are managed by 33 river basin organizations, including the BBWSs and lower-level BWSs, as well as the two PJTs. Fifty-three WSs are under provincial control and 15 are under district control, although basin management at the district level is largely inactive. The provinces have their own water resources

management agencies, called dinas, that manage river basins under their control. The dinas may be involved in some management activities in national river territories in coordination with related B(B)WSs.

In terms of regulatory framework, the country has a large body of laws and regulations that govern water resources management and oversight. For the most part, these represent a sound approach to integrated water resources management (IWRM), as established by the 2004 Water Law. Subsequent regulations were issued to achieve the following:

- Established a national water resources council and river territory councils
- Mandated the river basin/river territory approach
- Established river territory boundaries
- Determined the responsibilities of the different levels of government
- Established the B(B)WSs and the scope of their responsibilities and services
- Provided the basis for ministerial decrees dealing with guidelines for water resources management, including river basin planning, water sharing, and so on

The PJTs were formed as public corporations under the Ministry of State-Owned Enterprises prior to passage of the 2004 Water Law as basin organizations for the operation and maintenance of river infrastructure in selected basins of the country. Where they operate, they essentially assume many of the O&M functions previously carried out by government agencies and deliver bulk water to hydropower stations, water utilities, and industries in their service coverage areas. The mandate of both companies also includes providing a variety of other water-related services, including delivery of bulk water for irrigation, flood management, and water conservation services. Their core area of responsibility is to be principally responsible for the operation and maintenance of reservoirs and other river infrastructure, while they may share other water resources management responsibilities with the B(B)WSs and other resources management authorities.

To some extent, the delineation of the PJTs' roles is not very clear, and responsibilities sometimes overlap with those of the government agencies, such as the B(B)WSs, in those basins where the corporations are active. Furthermore, whereas the PJTs are profit oriented and charge fees for their services, the B(B)WSs are funded through government budgets.

The PJTs engage in a variety of noncore functions for improving their financial performance through power generation, tourism, clean water production and sale, construction, engineering and consulting services,

equipment rentals, and so forth. The two companies have similar responsibilities with regard to the maintenance of river infrastructure, including dams, reservoirs, culverts, embankments, and weirs. PJT II is also responsible for the operation of the Jatiluhur irrigation system; with a command area of over 200,000 hectares, it is the largest irrigation system in the country.

PJT I was initially established in 1990 to operate and maintain the infrastructure for the supply of surface water and for disaster mitigation in the Brantas river basin. Its charter was later modified to expand its responsibility to the Bangawan Solo basin. By comparison, PJT II was initially set up as a government organization in 1970 but was converted in 1999 to a public corporation to operate the Citarum river basin, the Jatiluhur Reservoir, and parts of the Ciliwung-Cisadane river basin.

The PJTs are governed by supervisory boards that currently are appointed by the Minister of Public Works for oversight of their operational performance. For PJT I, the supervisory board is chaired by a former senior staff member of the DGWR and includes senior representatives from the Economics Bureau and the East and Central Java provinces, as well as an independent member. The supervisory board for PJT II comprises members from the Ministry of Public Works, the Ministry of State-Owned Enterprises, and the Ministry of Agriculture, and two independent members.

PLN (Perusahaan Listrik Negara), the state-owned power company, is also involved in O&M functions to the extent that it owns, operates, and maintains reservoirs for its power generation purposes. An arrangement under the BLU (Badan Layanan Umum), a nonprofit public service agency set up under the Ministry of Finance, was once seen as a possible alternative to the for-profit PJT model as a way of managing profitable and unprofitable infrastructure together.

The DGWR largely acts as the regulator of water resources management services provided by both the B(B)WSs and PJTs as it advises the minister on water tariff arrangements and agreement of water allocation plans and supervises asset management. The PJTs follow financial reporting standards set by the Ministry of State-Owned Enterprises.

In February 2015, the 2004 Water Law was cancelled by the Constitutional Court, and the previous 1974 Water Law was reinstated as the controlling legislation until a new law is adopted. The justices declared the provisions of the 2004 law unconstitutional because the constitution specifies that the right to water is a basic right, and the control of water resources is a government mandate. According to the court, private sector actors will not be granted exclusive rights to water resources (such as rivers, springs, and lakes), but they will be able to apply for licenses to sell specific amounts of water, to be determined by the

government and local residents.¹ Apparently, a large part of the court's objection pertained to the taking of water by the private sector without appropriate water licenses.

The government plans to have a replacement law in place by the end of 2015.

KEY FINDINGS OF PJT OPERATIONAL AND FINANCIAL ASSESSMENT

Review and analysis of the operations and financial results of the PJTs were carried out for the period 2009–2013. The main findings are summarized below.

Overall, the PJT model has produced a number of benefits, given the stated budgetary constraints for infrastructure O&M. Compared to water resources management models in many countries, it is progressive in its approach. By allowing the PJTs to charge fees for their various bulk water services, the government has been able to tap new sources of revenue and commensurately reduce the pressure on public budgetary resources, albeit not entirely, and perhaps not most effectively. In addition, it has taken a major step for economic equity by making the consumers of these services (instead of the general public through tax revenue) pay for the services that actually have been rendered. This latter point is an important development that many developing countries still have not accomplished. For this reason, the government should be commended, and it should proceed steadfastly to improve on the current model before replicating it elsewhere.

PJT I and PJT II have similar core operational responsibilities but also major differences. First, PJT II is responsible for the operation of the Jatiluhur irrigation system, in addition to bulk water supply and flood control services. Second, like PJT I, PJT II provides bulk water to water utilities and industry and to three hydropower installations, including its own. It does not, however, charge its own installation for bulk water. Since PLN has not been paying for the raw water for its own hydropower installations, PJT II receives no income from those power units. Finally, PJT II operates the Jatiluhur hydropower installation and generates electricity that is sold through the power grid. It also sells electricity separately to retail customers, and part of the electricity production is for its own consumption. PJT I is interested in engaging in hydropower production but has not yet invested in its own installation.

These major differences in operating functions make clear that the PJT service areas were formed largely in response to the need to sustain financially each respective operation, rather than to establish or adhere to a systematic framework for clearly delineating water resources management functions from operations and maintenance. The

1. http://www.loc.gov/lawweb/servlet/lloc_news?disp3_l205404328_text.

addition to the PJTs' scope of operations of noncore functions, such as drinking water production and hydropower operation, reinforces this fact.

Discussions with selected B(B)WSs confirm that the PJTs focus on revenue raising and tend to ignore the maintenance of the infrastructure and installations which they are responsible for and do not generate revenue.

The approach to designating the PJT service areas has caused some responsibilities to overlap with those of B(B)WSs. While overlapping responsibilities is not necessarily a major concern with only two PJTs operating, it could make management functions highly complicated, increase transaction costs, and affect the coordination of a national rollout unless roles are more properly designated. Currently, when creating a service territory of PJT operation, the roles are designated to appease the interest of the PJTs in staying profitable. While not necessarily a major problem, these decisions should be based on other considerations, particularly if the PJTs' performance is robust and they can accommodate some unprofitable basins.

In practice, the present approach to role designation has led to a situation where the B(B)WSs, in addition to their water resources management role, are required to continue the O&M functions for smaller and nonrevenue-generating river basins. The result is B(B)WSs and PJTs coexisting as operators in the same basins. The current arrangements for main river infrastructure O&M in basins where PJTs operate are summarized in chapter 3 of the report.

In brief, the responsibilities of PJT I are as follows:

- a. It supplies water to 13 hydropower plants of PLN and 20 urban water companies and to sugar factories and industry, and it supplies irrigation water to 7 B(B)WSs and provincial and district irrigation areas.
- b. It flushes the river through Surabaya.
- c. It provides flood control service.

PJT II does the following:

- a. It supplies water to 3 hydropower plants, 5 city water companies (PDAMs), and about 227 industries, and for 242,000 hectares of paddy irrigation.
- b. It flushes the river for the cities of Krawang, Bekasi, and Jakarta.
- c. It provides flood control service.

Clearly, the current approach to designating the PJT service areas and roles complicates governance and regulatory arrangements, which can lead to a number of efficiency, accountability, and transparency problems, as well as conflicts of interest. This should be corrected when extending the PJT model to future river basins. In addition, the current approach can impair the harmonized operation

of infrastructure during emergency flooding, as evidenced in 2010 in the Citarum river basin, where PJT II operates one and PLN two of the cascade reservoirs.

Reinforcing the findings above, the study identified a number of instances where conflicts of interest may undermine management effectiveness. B(B)WSs can be operators, but as units of the DGWR boards of management which oversee the PJTs' performance, they are also part of the governance framework. More important, PJT II is currently the bulk water provider to both PLN power units and its own hydropower unit. Not only does this conflict create issues in times of water scarcity, but PJT II also realizes a much lower cost basis than PLN on power generation because it does not need to recover the costs for the fixed assets, which are essentially owned by the government.

That this has been a point of contention is clear in a current dispute between PLN and PJT II over payment for the water services PJT II has provided. For similar reasons, the interests of PJT II, as both the bulk and retail supplier, may also be in conflict with the operation of the Jatiluhur irrigation area. Although no fees are charged for irrigation, conditions of water scarcity would likely create contention between PJT II's use of water for its own hydropower plant and the supply for the irrigation network.

Furthermore, as a hydropower operator and water provider to hydropower installations, the PJT may seek to maximize water held in storage instead of releasing it to create more flood storage capacity. Discussions with stakeholders in a basin where PJT I and B(B)WSs coexist confirm this conflict is taking place, as PJT I tends to store water for power generation rather than comply with its operating agreement that requires flood releases.

The preponderance of noncore functions could create business priority issues. As indicated earlier, both PJTs engage in a variety of noncore activities, including tourism, laboratory services, equipment and land rentals, hospital services, drinking water sales, and power generation, among others. What is not clear, however, is whether these activities actually add much value to the core businesses or whether they divert the PJTs from their mandated core functions. In other words, do these noncore services benefit or hinder? PJT II is currently reliant on power generation for its financial survival, given the low contribution of core services to its total revenue. As mentioned above, PLN has refused to pay for bulk water service, and PJT II does not charge its own hydropower station. Its core business activities contribute only 26 percent of total revenue. By comparison, PJT II's tourism business is only marginally profitable and may be a financial drain on the company. As for PJT I, the core business provides 89 percent of total revenue, but, like PJT II, it is also seeking to increase noncore revenue through power generation and other activities. Moreover, aside from what is known about PJT II's power

and tourism businesses, very little information is available on the effective cost and level of effort required to operate the noncore business services, and assessing the value they add to the company is difficult. Unless put into check, these additional services could become a major distraction to the companies' main business focus.

Both companies have performed exceptionally over the period 2009–13, with high profit margins and substantial cash balances. Aside from the issues mentioned above, both companies show very strong operational and financial results. These are reflected in table ES.1, which shows comparative results. On the operational side, PJT I showed a profit margin of 18 percent for the period and a cash balance of Rp 203 billion (US\$1 equalled approximately Rp 12,000 in 2014), or 56 percent of total assets. Despite its problems with payment from PLN, PJT II boasted a 14.6 percent profit margin on Rp 534.9 billion in revenue and, by the end of 2013, held Rp 298.3 billion in cash, or 43 percent of total assets.

Viewed purely from a financial point of view, these are very impressive performance figures for both companies. Moreover, resolution of the payment issue concerning bulk water services for power stations would add a significant amount of profit to PJT II, since most corresponding costs are already factored into the current operations.

Notwithstanding these positive financial results, both companies have relied substantially on tariff increases rather than efficiency improvements over the years. For PJT I, average annual tariffs increased from 2011 to 2014 by up to 14 percent for hydropower operators, 19 percent for urban PDAMs, and 9 percent for industry. For PJT II, they increased by up to 18 percent (30 percent, with a new

canal construction surcharge) for PDAMs and industry in the same period. The headroom for additional increases is uncertain, and such a practice could pose a significant risk if left unchecked. Low rainfall is also a threat, and both companies could benefit from more cost containment to slow the growth in operating expenses.

More important, as providers of public services, these companies should be subject to greater economic regulatory oversight to ensure cost effectiveness in concession services, which are essentially not subject to competition.

Overall, in light of all the above findings, corrective measures should be taken so the current PJT model can be strengthened into a robust institutional, financial, and management framework for national replication. The study revealed a number of weaknesses with the current basin operations approach. Corrective measures available to address those weaknesses include the following:

- a. Designating PJT service territories
- b. Delineating core responsibilities between the PJTs and the B(B)WSs and other major water infrastructure operators (for example, PLN)
- c. Imposing economic regulation that promotes cost effectiveness and equity in user charges
- d. Improving the organization of functions and monitoring operations through effective benchmarking
- e. Undertaking competitive extension to new river basin territories
- f. Strengthening institutional arrangements to improve central management and the supervision and administration of PJTs and B(B)WSs

TABLE ES.1

A summary of PJT financial performance

Parameter	Perum Jasa Tirta I	Perum Jasa Tirta II
Total Assets	363.3	686.5
Cash Assets	203.0	298.3
Total Revenue	342.9	534.9
Revenue (core services)	89%	26%
Operating Expenses	258.3	437.3
Profit Margin	18.0%	14.6%
Operating Ratio	72.0%	75.4%
Net profit	62.0	77.8
Collection Period	31 days	12.1 days
Liquid Assets to Capital	91.2%	71.3%
Liabilities to Total Assets	17.89%	22.8%

Source: PJT I and PJT II.

POLICY CONSIDERATIONS FOR FUTURE RIVER BASIN OPERATIONAL SERVICES

The following policy measures are recommended to strengthen the current approach to river basin operational services and management in Indonesia:

Strengthen the regulatory approach. The regulatory approach and its performance is a key weakness of the current river basin operations approach. It has resulted in limited river infrastructure O&M and asset management, uncertainty in water allocations, little or no enforcement of operating agreements, and a lack of transparency and independence in tariff setting. To address these issues, the regulatory approach should be strengthened by establishing more independent and transparent processes through clear separation of the functions of the regulator, the river basin manager, and the river operator (bulk water supplier). Greater priority and urgency should be given to establishing the requirements for asset management and O&M in particular, and to the monitoring and enforcement of operating agreements and licenses.

Regulate the core functions. Economic regulatory functions are not exercised for either the public side of the business or the auxiliary commercial business services of the PJTs. In particular, some of the private business lines are sheltered by the exclusivity provided to the companies for their core business. Insofar as the public side is concerned, the companies operate as monopolies. For these reasons alone, their operations should be monitored and regulated more rigorously.

While noncore business services should be allowed to earn what the market bears, the core functions should be regulated more strictly in terms of allowable tariffs, cost containment, asset management, and operation and maintenance requirements, as well as investment obligations. To implement such a philosophy effectively, however, the government needs a much better determination of the standard costs associated with the O&M requirements in a given coverage area. These do not appear to be available. For existing coverage areas, the DGWR should require both PJTs to put together well-developed asset management or maintenance plans, using a standard format that would spell out all routine and major maintenance requirements broken down into a long-term schedule (for example, 20–30 years), with budgeted costs for each main infrastructure unit within each basin. Such a maintenance plan would then be closely monitored for compliance by the DGWR and its designated B(B)WSs, and would be a main component of proposal reviews for tariff increases.

Move toward competitive bidding for new service areas. For new service areas, the DGWR should move toward a competitive approach, whereby PJTs (existing and newly developed) would compete on a least cost basis for the core functions associated with O&M requirements

for the given service coverage areas. This means a request for bids (or proposals) would include a maintenance plan as reference. Development of and adherence to a well-defined asset management plan that specifies the service obligations of the company under its core functions should be required. A satisfactory asset management plan, formulated according to specific guidelines, and its implementation would be a key performance indicator to be monitored by the regulator. As an interim measure, monitoring of key river operational performance indicators, such as asset management, water deliveries to entitlement holders, revenue, financing, and so on, should be put into place for the river operations units of the PJTs and B(B)WSs.

Use competition to strengthen operational efficiency and balance profitable versus unprofitable coverage areas. Under a competitive bidding approach, the DGWR could still bundle various basins into coverage areas to ensure financial viability without the need for operational subsidies. Operating bids could also be implemented on a “least subsidy” basis, whereby a supplemental budget could be provided to shore up an operational deficit in the core functions.

Alternatively, the government could consider establishment of a fund into which PJTs may pay a concession fee from profits, which the government would then allocate to non-profitable river basins, to offset the O&M costs of other basins that would require subsidies. Based on the discussions with DGWR officials, the government seems to have good benchmark data for bulk water tariffs that can be utilized to assess new coverage areas.

The prospects for extension of the PJT model appear promising. For example, discussion with the BBWS revealed potential revenue from the Serang-Luci basin could support not only operations and maintenance in the basin, but also O&M of the neighbouring basins deemed unprofitable on their own, and perhaps enable payment of some concession fee to the government as well.

The government might also consider opening up these tenders to new or other public corporations to enter the sector for competition. In due course, private operators could be considered for involvement. With only two companies currently in place, the spirit of a competitive bid is effectively limited.

Adopt an “overall river basin approach” for all river infrastructure O&M. The government should look to improve river infrastructure O&M significantly by taking an “overall river basin approach” rather than dealing with individual structures based on their profitability. This would mean integrated management of all central government river infrastructure within a basin by a PJT—an approach that would largely eliminate the current overlaps in functions, responsibilities, and activities among the PJTs, B(B)WSs, dinas, and PLN business units. Elimination

or significant reduction of these overlaps would improve management effectiveness, reduce conflicts of interest to ensure clear accountabilities, increase efficiency, and reduce risks of slow or uncoordinated operations during floods and droughts.

The overall river basin approach would apply a framework within which the roles of resources manager, bulk water supply operator, and retail water supply operator are clearly separated, for example, a BWS or BBWS would be the basin manager; the PJT would be in charge of infrastructure management and bulk water supply; and irrigation agencies and urban water utilities would control retail water. Alternatively, where the decision is to have a “vertically integrated” business, separate internal business units would be established and would report independently.

Strengthen the adjustment policy and process for tariff setting. In line with the points above favouring stricter regulation, the formula for tariff setting and adjustments should be strengthened, and, as part of this formula, the government should decide whether PJTs should be responsible for investments in key infrastructure assets. While some indications are that the PJTs have investment responsibilities, specific and verifiable targets have not been developed. Investment responsibilities should be part of their service obligations, as is standard practice globally in normal concession agreements. In such cases, the PJTs would be allowed to earn a return on appropriately invested capital, which could also be part of the tariff adjustment protocol.

Improve asset management. The concept of asset management appears inadequately understood in the sector, and scope for improvement is ample. Very little information was available to assess this function for the PJTs and B(B)WSs. The river infrastructure O&M was found to be generally weak for most B(B)WSs and provincial water departments (Balai Pengelolaan Sumber Daya Air, or BPSDAs) and PJT II. Lack of technical skills was also identified as an issue. As indicated earlier face-to-face interviews indicated that the PJTs often do not perform O&M properly for nonrevenue-generating infrastructure for which they are responsible, such as maintenance of flood canals. It is generally believed that the PJTs only focus on maintenance of revenue-generating infrastructure.

In light of the above, the DGWR as the regulator needs to supervise infrastructure O&M performance much more closely by providing more clear direction on budget allocation and use to B(B)WSs and by setting asset management standards including for asset management plans, performance monitoring, and linking of tariff setting to compliance with these requirements and standards.

Ring-fence the core functions. The government should require PJTs to ring-fence their core business activities from their noncore commercial services so company

performance is transparent and can be assessed, especially for core businesses. Better financial information should also be provided in the event core operations cannot recover all related costs, as is the case with PJT II.

Practically, this would mean separating the PJTs into subsidiaries, with entirely separate financial statements for core and noncore services. The companies would not need to develop a separate financial statement for each major private business line, but the assets, revenues, and expenses for the core business should be clearly separated from the rest of the operations. The separate financial statements of the core businesses would be consolidated at the company level. Similar arrangements should be required of B(B)WSs to improve the performance of their core business activities.

Prevent conflicts of interest in servicing and competing with independent power producers (IPPs). The current conflict between PJT II and PLN over the payment of water service fees needs to be resolved. Any other conflicts that may arise from the expansion of PJTs into noncore service areas, leading to direct competition with their core business of bulk water services to the entitled customers, should also be averted.

While the selling of power by the PJTs will not necessarily be a problem in the full scope of operations, the transaction between the core business side and the power generation side should be handled on an “arm’s-length” basis. This would require setting up a fully owned power generation subsidiary of the PJTs and charging fully for the bulk water services provided by the core business to the subsidiary company. Based on estimates using the price charged by PJT I to its hydropower units, PJT II could generate as much as Rp 176 billion by charging its power unit for bulk water. This would mean the core business would likely be financially viable through an effective separation. Furthermore, if the companies are not required to amortize the asset value of the power infrastructure, they should pay a concession fee to the government.

Ensure consistency in financial reporting. The government needs to standardize the reporting requirements for PJTs. At present, the financial reporting formats are quite different, which makes it difficult to benchmark the companies’ performance accurately vis-à-vis one another. Furthermore, the categorization of costs, revenues, assets, and so on affects the ratio analysis, and the use of different definitions for operating costs and revenues renders the ratios incomparable. The companies should adopt the same reporting formats for their primary and subsidiary financial statements, breaking expenses down between direct operating expenses and overhead items, such as general and administrative, office, selling, and promotional expenses. Employee expenses should be broken down in the same fashion to better reflect the costs of direct operations versus general expenses. Finally, this standardization

should be applied to B(B)WSs as well so the scope for transferring their responsibilities to PJTs can be assessed.

Focus on performance monitoring and reporting. The PJTs and B(B)WSs seem to be doing little performance monitoring and reporting. To improve this situation, the government needs to require river basin operators to report consistently against performance indicators and targets, including those having to do with water deliveries, asset management, financial performance, customer satisfaction, and so on. Currently, the PJTs focus their financial performance measurement on “actual” versus “planned” estimates, which is a static approach for measuring real performance. A better approach is through “flexible” or “performance” budgeting, so the reasons for differences in total profits are clear, for instance, whether such changes are due to performance problems or just changes in production.

Roll out the PJT approach nationally. The government should consider how to increase the number of qualified new entrants into river basin/infrastructure management, as two PJTs will not suffice to create a competitive environment in the sector. Given the number of river basins in the country, some eight to twelve independent PJTs would likely be required for full national coverage and to promote competition and benchmarking of PJT performance. The national roll-out of the PJT approach would need to be planned systematically to avoid the current situation of having different PJT models, leading to difficulties in governance and inconsistent policy and management

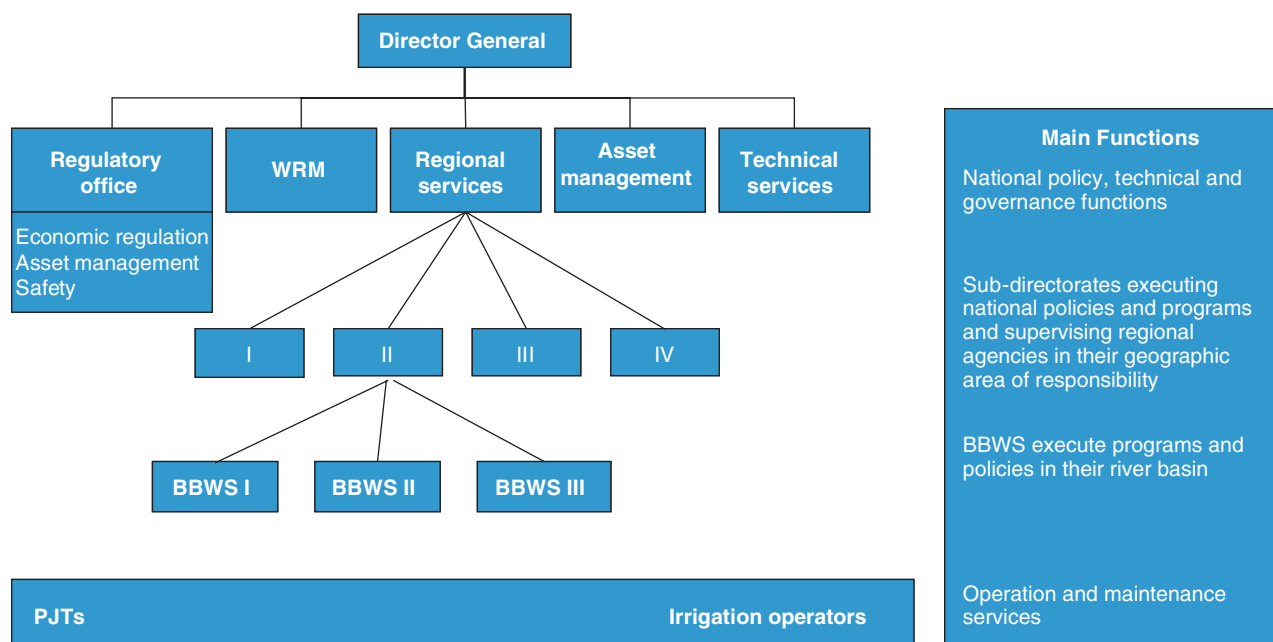
practices. The first step would be deciding on the most suitable PJT model (the PJT I approach appears to be working better than the PJT II) and then taking on expansion areas, either by allowing private companies to enter the sector or by requiring the existing PJTs to spin off separate legal entities from their current operations. At a minimum, the PJT I expansion proposal should be implemented by a fully owned subsidiary of a PJT, which, in the longer term and after standard practices are well established, could be spun off as an entirely independent service provider company.

Streamline the DGWR organization. The national replication of the PJT model requires much stronger field base operations and much better definition of roles and responsibilities between the B(B)WSs and the PJTs, as well as the establishment of a national regulator to regulate properly the public good aspects of the PJT business. The regulator would strengthen the tariff-setting mechanism; monitor adherence to service standards and compliance with water allocation agreements and asset management requirements; set requirements for financial reporting; and monitor consumer satisfaction. To accomplish all this, further streamlining of the DGWR organization may be needed. Figure ES.1 presents one possible option for strengthening the overall organization, including the following salient features:

- A regulatory office in charge of standards, safety, water allocation, water quality, and economic regulation;
- Technical and planning functions at the headquarters office that would support regional executing units, in

FIGURE ES.1

A Possible Future Structure of DGWR



Source: Authors.

addition to functions associated with the DGWR's core role of supporting national policymaking and governance; and

- c. A division comprising a number of geographically focused directorates responsible for the executing functions for distinct territories and for overseeing the B(B)WSs and other regional activities of the DGWR. The B(B)WSs would be responsible for water resources management as well as supervision of contracts with PJTs operating within their territories, consistent with their current responsibilities. The division would also, with the relevant B(B)WSs, oversee performance of the PJTs related to their asset and water resources management responsibilities. More attention is needed to the development of detailed operation and maintenance plans which would be executed by the PJTs but monitored by the B(B)WSs, with the support of an asset management department at the headquarters level.

RECOMMENDED STEPS FOR STRENGTHENING RIVER BASIN OPERATIONS

The principal recommendation emerging from this study is to strengthen the institutional arrangements for and approach to river basin operations, with the operation and management of river infrastructure eventually becoming the sole responsibility of enterprises, such as PJTs, in many more basins. The new approach centers on a clear, systematic, and harmonized separation of responsibilities, especially between B(B)WSs and PJTs, and on strengthened regulation of the service providers.

Recognizing the many information gaps found during this study, further studies and appropriate arrangements are needed to enable a smooth and minimally risky transition from the current mixed B(B)WS–PJT model to the recommended more streamlined, and accountable regionalized PJT approach. Therefore, a well-planned and step-by-step implementation approach is advisable.

The recommended implementation steps detailed in this report are summarized below.

Making Arrangements to Strengthen the Current Approach and Prepare for Transition

The preparatory stage would involve two steps:

- a. *Setting up separate river operation business units in the PJTs:* For both PJTs, separate internal river operations business units would be established and reports made on current services; on O&M, asset condition, and management approaches; on budgets and (human) resourcing; on financial performance, including tariff systems and approaches to infrastructure depreciation and renewals; on financial transparency of noncore activities; on distribution of profits; on the potential

to increase royalty payments and tariffs; and on any preferential tariff treatment accorded to internal business activities. This reporting would provide a better understanding of the PJT river operations business. For B(B)WSs operating in the same basins, similar arrangements should be considered.

- b. *Conducting a systematic national assessment of river basins and planning for the progressive extension of management by PJTs I and II:* To date, studies of the potential of extending the PJT approach to other river basins have been limited. Further studies should be more thorough and systematic and should include assessment of relevant B(B)WS activities. Such assessment would identify suitable river basins and territories for extension of the PJT approach, as well as facilitate planning for extending the approach progressively.

Detailing the Proposed Strengthened River Basin Operations Model

In this stage, a model arrangement would be developed featuring a stronger and more independent regulator and separation of the river basin manager, bulk water operator, and retail water users such as users of irrigation, hydro-power, and urban water supply. Activities could include the following:

- a. *Evaluating successful approaches to regulating and providing river basin services:* Successful approaches from elsewhere would be evaluated and lessons drawn for developing an approach which suits Indonesian conditions;
- b. *Evaluating a transfer of responsibilities from B(B)WSs to PJTs:* In the PJT I and PJT II areas, following on from step (a), the benefits and implications of transferring infrastructure O&M responsibility from the B(B)WS to the PJTs so the latter manage all infrastructure in river basins, would be assessed and transitional arrangements identified. A final decision would be made as to whether the PJT or another approach (for example, BLU) is more appropriate for the Indonesian situation;
- c. *Specifying the core and noncore aspects of river operations:* The extent of and best approach to the management of noncore aspects of river operations by PJTs would be evaluated, including how this is done elsewhere;
- d. *Establishing regulatory arrangements and procedures for the core responsibilities of river operations service providers:* The practice of independent regulation of tariff setting, asset management, water supply (covering water allocations, service standards, and water quality), flood and drought management, environmental protection, investment requirements and financial reporting, performance monitoring, and enforcement,

would be evaluated and established with strengthened institutional arrangements and procedures.

Piloting the Proposed Model of Strengthened River Operations

The new model of regulation and river infrastructure operations, with the PJT responsible for all basin infrastructure and noncore business activities outsourced, should be piloted and adapted before it is applied more widely. A river basin, such as Bengawan Solo, which has several different river infrastructure managers and reasonably well-developed conditions and working arrangements, could be used as a pilot basin. The related PJT I extension areas would be integrated into this piloting study.

Regionalizing and Competitively Providing River Operations

The improved PJT approach would be progressively extended to all regions by addressing the lessons from the pilot studies. Performance monitoring of river operation services for the river basins managed by PJTs I and II could be implemented immediately and extended as other PJT subsidiaries are established.

The new river basin operations approach would be regionalized by establishing new PJTs from the local offices (subsidiaries) of PJTs I and II that are established as part of the extension of their operations, as referenced above. This would take place once the DGWR had established the regulatory arrangements and the local offices had established their practices and procedures.

Based on the results of earlier studies, commercially viable river basins where O&M functions are well understood would be selected for competitive bidding. The scope for competitively tendering these services for a 10-year concession period, including the necessary regulatory arrangements, would be assessed. Tendering would be piloted in basins or territories that appear most feasible

and attractive and where the services to be tendered are well understood.

Consultation with the Client and Stakeholders on Study Findings and Recommendations

In April, 2015, a workshop was convened by the DGWR and attended by representatives of different stakeholder groups, including the National Water Council, Bappenas, PJT I, B(B)WSs from the PJTs I and II service areas, PLN, and the study team. In summing up, the chairman noted that, to settle the preferred approach to managing river basin operational services, a number of issues needed deeper study and discussion within the government, including the following:

- a. The strategy for the wider extension of the PJT approach and whether the mandates and business model of B(B)WSs need to be changed;
- b. The preferred option(s) for extending the existing PJTs nationally, following a phased approach;
- c. The legality of cross subsidy payments between river basins from within a healthy PJT enterprise;
- d. PJTs' involvement in infrastructure works: since they do not own infrastructure, the scope for them to borrow from financial institutions to undertake significant infrastructure work is limited;
- e. The range of models for delivering river basin operational services, including a vertically integrated company, and how these would be enabled within the Indonesian legal environment;
- f. The most appropriate mechanism and approach for stronger regulation of the PJTs; and
- g. The critical issue of river infrastructure O&M funding and management, which is particularly relevant, as the government is embarking on a large investment program for building river infrastructure.

Indonesia is an archipelago of 6,000 inhabited and mostly small islands, which means that river basins are small, and, because of mountainous conditions, rivers are mostly short and steep. The country comprises thirty-three provinces and one special administrative zone. Population densities and levels of development and administrative governance vary considerably, and so do river basin management approaches and capacity.

The management of river basins in Indonesia is undertaken by organizations at the national, provincial, and district levels of government, often with overlapping responsibilities. The small river basins have been combined by regulation into larger “river territories” as the overall hydrological administrative unit.

National-level river basins (Wilayah Sungai(s), or WSs, for short) are the responsibility of National River Basin (Territory) Management Organizations (RBOs), called either Balai Besar Wilayah Sungai(s) (B(B)WSs) or Balai Wilayah Sungai(s) (BWSs); the two are referenced together here as B(B)WSs. These national government agencies fill both regulatory and management functions, as well as undertaking construction, operation, and maintenance of river infrastructure and irrigation systems larger than 3,000 hectares. The B(B)WSs undertake river basin management (including policy, planning, water resources monitoring, and regulation of water sharing and river exploitation, such as sand mining) as well as service provision (including operation, maintenance, and construction) of river infrastructure (including reservoirs, weirs, and offtakes). They are also responsible for the operation and maintenance (O&M) of large irrigation areas. This approach has several recognized shortcomings, including often poor results in O&M and water resources management, as well as an incapacity to collect fees for O&M from water users. Outsourcing of the implementation of responsibilities is undertaken through memoranda of understanding (MOUs) and the related detailed “operating agreements” (Kerja Sama Operasi, or KSOs) with other providers, especially provincial river basin and water resources management departments (dinas).

State-owned enterprises (Perum Jasa Tirta, or PJTs) also undertake river operations in some parts of Java and

Sumatra. Two PJTs (referenced hereafter as PJT I and PJT II) were formed as public corporations as an alternative arrangement for the operation and maintenance of river infrastructure. They are allowed to earn profits by charging for bulk water supply to water utilities, industry, and hydropower units—primarily those of the Indonesian state-owned power company (Perusahaan Listrik Negara, or PLN) and other independent power producers. As part of their mandate, both companies also provide a variety of other water resources services, including supply of raw water for irrigation, flood management, and water conservation services. Unlike the B(B)WSs, they have the capacity to recover funds from users of water for non-irrigation purposes.

PJT I operates in some of the river basins in East Java, Central Java, and North Sumatra and is responsible for water resources services, including the O&M of major infrastructure for some 40 rivers. PJT II operates head works and rivers in several river basins of West Java and has responsibility for the O&M of the primary canals of the Jatiluhur irrigation system. In all these areas, B(B)WSs act as river basin regulators through the development and implementation of river basin plans, coordination among water use sectors and related stakeholders, and water allocations. PJTs I and II are “for-profit” organizations and so operate only “profitable” infrastructure, with the exception of the irrigation infrastructure, for which PJT II is responsible but for which (as indicated above) it is prevented from charging service fees. A consequence of this “for-profit” obligation of PJT I is that the O&M of “unprofitable” infrastructure is not addressed and is ostensibly left to B(B)WSs as the operators.

The two companies also engage in a variety of other non-core functions for improving their financial results through power generation, tourism, clean water production and sale, construction, engineering and consulting services, and equipment rentals, among others. Both companies have similar responsibilities with regard to the maintenance of the water infrastructure, which includes dams, reservoirs, culverts, embankments, and weirs.

The government of Indonesia is concerned about the capacity and effectiveness of river basin organizations—that

is, the PJTs and B(B)WSs—in providing the above wide range of services and, in particular, about the levels of O&M being achieved. The Directorate-General for Water Resources (DGWR) asked the World Bank to support a study that would assess approaches to river basin operations and the scope and options for a river basin infrastructure operator to provide sustainable services that are responsive to water user needs.

Focusing primarily on the service delivery of bulk water supply and the O&M of river infrastructure in the national basins where the two corporations (referred to hereafter as PJT I and PJT II) operate, the study team carried out the following major tasks:

- a. Review of current arrangements in terms of roles and responsibilities and identification of key issues, including review of the division of responsibilities for river basin water resources management and the related service delivery among the different institutions
- b. Operational and financial analysis of the PJTs, including identification of current levels and sources of revenue and assessment of financial sustainability, and review of the proposal for PJT I to expand into additional river basins
- c. Assessment of the overall PJT model in light of domestic and international experiences
- d. Generation of policy recommendations, based on the analyses and assessments, for improving the efficacy of

operational management practices and for replication of the strengthened approach

Because of data constraints, the team was unable to complete the full scope of the tasks, particularly for the PJT I expansion proposal review. The feasibility study produced by PJT I for expansion into new river basins provided only summary financial and operational information, which was insufficient for assessing the efficiency of the proposed expansion. While the study did reveal a financially sustainable operation, it could not go beyond this basic assessment to assess the effectiveness of the operation. Data constraints also limited assessment of the operational performance of both the B(B)WSs and the PJTs. Efforts to identify O&M unit costs and maintenance plans for important river and water infrastructure of existing service areas were inconclusive. Without an extensive investigative review, a full assessment of the adequacy and effectiveness of the operation and maintenance functions was not possible, beyond what could be revealed by the audited financial reports, limited official documents and publications, and discussions with a number of entities concerned. Nonetheless, these data limitations became part of the important findings, in response to which policy options have been recommended.

This report presents an initial assessment of these issues and provides recommendations for future work, which were discussed at a stakeholder consultation workshop in April, 2015.

OVERVIEW OF CURRENT RIVER BASIN OPERATIONAL ARRANGEMENTS IN INDONESIA

2.1 OVERVIEW OF INSTITUTIONS INVOLVED IN RIVER BASIN SERVICES

2.1.1 Key Aspects of Laws and Regulations Underpinning River Basin Management

Laws in Indonesia have undergone considerable revision since the political reforms of 1998. For water resources management, key among these have been successive laws and regulations (for example, UU22/1999, UU32/32/2004, UU 8/2005, UU 12/2008, PP 38/2007) dealing with decentralization and role-sharing arrangements among the central, provincial, and district governments. As a result, provinces and districts have become important actors in water resources development and service delivery at the local level.

The 2004 Water Law (UU 7/2004) introduced many elements of modern and integrated water resources management to Indonesia, particularly by stipulating a river basin approach and the explicit participation of stakeholders. Articles 13 to 20 describe the authorities and responsibilities for water resources management as they fall under the four levels of administration. In practice, the national and provincial levels are the most active; the districts are active to a lesser extent, and only small-scale activity (concerning irrigation and water supply) takes place at the village level.

The river basin/territory-based approach to water resources management mandated by the Water Law was further elaborated in government regulation PP 42/2008 on water resources management, in presidential decree 12/2012 on the establishment of river basins, and in Kepres 12/2012, which mandated 131 river territories for the whole of Indonesia.

PP 42/2008 classifies river territories into three categories:

- a. National-level territories, which have the following attributes:
 - i. They are trans-country—that is, the river territory is shared with a neighbouring country.
 - ii. They are trans-provincial.
 - iii. They include national strategic river territories which, although they lie within one province, have

been deemed of such significance as to require management at the national level.

- b. Provincial river territories have these characteristics:
 - i. They lie within one province.
 - ii. They are trans-district.
- c. District river territories

2.1.2 Key Institutions Involved in River Basin Management

The following are the primary institutions responsible for the management of water resources and river basins.

The National Water Resources Council

The National Water Resources Council reports directly to the president on water resources management, including with respect to the preparation of a national policy and strategy.

The council comprises 44 members, of whom 16 are (central) government members, 6 are regional government members, and 22 are nongovernment members.

The central government members are the Coordinating Minister for Economic Affairs, who is the council chairperson, plus the ministers of the following agencies: National Development Planning; Water Resources (Public Works); Home Affairs; Environment; Agriculture; Health; Forestry; Transportation; Industry; Energy and Mineral Resources; Maritime Resources and Fisheries; Research and Technology; and National Education. Also on the council are the heads of Meteorology and Geophysics and of the leading science institute.

The regional government representatives comprise two governors each from the western, central, and eastern regions of Indonesia.

The nongovernment members come from involved stakeholder organizations and associations that represent agricultural water users; drinking water consumers; water users; fisheries; conservation; electricity generation; water transport; tourism and sports; mining; forestry; and disaster management.

The Directorate General Water Resources (DGWR)

The Ministry of Public Works (MPW) comprises three directorates general, one of which is the Directorate General of Water Resources, which is responsible for water affairs in Indonesia and, accordingly, the implementation of the Water Law and subordinate regulations.

The current organizational structure of the DGWR was implemented in 2010 and comprises one corporate services directorate—the Secretariat of the Directorate General—and five technical directorates: the directorates of Water Resources Management; Planning; Rivers & Coasts; Irrigation & Swamps; and Operation & Maintenance. Of twenty-five sub-directorates (sub-dits), three, for Java and Kalimantan, Sumatra, and Eastern Indonesia, respectively, are regionally based and are subordinate to Rivers & Coasts and Irrigation & Swamps. The B(B)WSs, as regionalized agencies within the DGWR, report directly to the director general.

River Territory Councils (TKPSDA)

River Territory Councils (Tim Koordinasi Pengelolaan Sumber Daya Air, or TKPSDA for short) are established according to the intensity of water resource management needs. They have a half government and half nongovernment membership. Each council is to assist the responsible

minister, governor, regent, or mayor for the relevant river territory area in the management of water resources. Secretariat support is provided by the relevant B(B)WS.

TKPSDAs have been convened for most national-level river territories.

Other Councils

Each provincial government has a provincial water resources council and basin councils for its respective basins.

River Territory Management Organizations (B(B)WSs)

The central government's river territory management organizations, Balai (Besar) Wilayah Sungai(s), or B(B)WSs, are regionalized units within the DGWR organization. One B(B)WS may be responsible for several national river territory areas (Wilayah Sungai, or WS) and, accordingly, may be responsible for supporting several TKPSDAs.

B(B)WSs are classified ostensibly according to the complexity of river basin management as either BBWS type A or type B, or the lower-level BWSs, type A or type B. The classification determines the staffing and budget of the organization, with the BBWSs being the best resourced.

The number and types of river territories and the associated river basin organizations are shown in table 2.1.

TABLE 2.1

Summary of river territory types and conditions

Management of River Territories (WSs)	Number of WSs	National WS Type	Number of Basin Organizations (WS boundaries decided by responsible level of government)
Under central control	63 WSs (48%)	Trans-country: 5	3 RBOs i. BWSs Kalimantan III ii. BWSs Nusa Tenggara II iii. BWSs Papua
		Trans-province: 29	22 RBOs 8 BBWSs 14 BWSs
		National-strategic: 29	23 RBOs 9 BBWSs 14 BWSs
Total	63	63	33 national RBO (12 BBWSs, 21 BWSs) ¹
Under provincial control	53 WS (40%)		57 BPSDAs (25 in Java) (number decided by province)
Under districts/cities	15 WS (12%)		14 managed by district dinas (number decided by district)
TOTAL	131 WSs		114 RBOs

Source: Azhari et al. 2014.

¹ There are 48 national RBO areas, but some RBOs are responsible for more than one national WS area. Five BBWSs are each responsible for a trans-province WS area and a national strategic WS area, as are eight BWSs. One BWS is responsible for a trans-country WS area and a trans-province WS.

Government-Owned, For-Profit Enterprise (Perum Jasa Tirta, or PJT)

A “perum” is a corporation that both conducts revenue-generating activities that must be self-supporting and manages nonrevenue-generating public welfare tasks (such as flood control) that are wholly supported by government.

Perum Jasa Tirta (PJT) are government-owned, for-profit enterprises that provide bulk water services, including the operation and maintenance (O&M) of government-owned water infrastructure. Two PJTs currently exist. PJT I was originally created for a river territory (Brantus) in East Java and then expanded to Bengawan Solo but is now absorbing additional territories in Central Java and North Sumatra into its operations. PJT II manages river basins in part of East Java and also has responsibility for the O&M of a large irrigation area as a legacy of its establishment in 1970.

PJT I and PJT II are described in more detail in sections 3 and 4.

Government-Owned, Non-profit-Oriented Enterprises (Badan Layanan Umum, BLU)

Badan Layanan Umum (BLU) are set up under the Ministry of Finance as government-owned, nonprofit-oriented enterprises that can collect funds for service from the private sector as well as receive them from government. They can be established at national, provincial, and district levels. At this time, BLU are only used in the education and health sectors, and there is a moratorium on extending the approach to others.

The establishment of water service BLUs has been a subject of repeated interest and study. It is understood, however, that the option of BLU as basin manager and river operator has not been pursued because of disagreement within the government on how the profitable functions should be managed.

Government-Owned Electricity Corporation (Perusahaan Listrik Negara, PLN)

PLN is the Indonesian government-owned corporation that generates power and has a monopoly on electricity distribution and retail in Indonesia. A “peresero” such as PLN fully owns all its revenue-generating assets; all are included in its balance sheet, and their financial rate of return needs to be satisfactory. This contrasts with the PJTs, which do not hold assets on their balance sheets.

PLN includes 11 subsidiaries. Among them are PT Java-Bali and PT Indonesia Power, which have hydropower generating plants in the PJT II region.

Provincial Public Works (Dinas PU)/Provincial River Territory Management Unit (Balai Pengelolaan Sumber Daya Air)

Each province in Indonesia has a public works department (Dinas PU), with a water resources management unit. In provincial water dinas in Java, provincial river territory management units (Balai Pengelolaan Sumber Daya Air, or BPSDA) are responsible for specific river basins. Their responsibilities are similar and relate to water resources management activities, such as water allocation, flood management, water quality monitoring and control, and so on. They are also responsible for managing irrigation areas of between 1,000 and 3,000 hectares that are under the jurisdiction of provinces. In some cases, they manage infrastructure and irrigation areas that are the responsibility of the national level (more than 3,000 hectares) under a memorandum of understanding (MOU) and related detailed operating agreement (Kerja Sama Operasi, or KSO) with the relevant B(B)WS. Generally, for historical reasons, the experience, local staff and offices, and capacity for water resources management of BPSDAs are considered greater than those of B(B)WSs.

Urban Water Supply Authority (Perusahaan Daerah Air Minum)

PDAMs are non-profit urban water supply authorities (Perusahaan Daerah Air Minum, or PDAM) that can be established at the national, provincial, city, and district levels. They are usually at the city and district levels.

District Public Works Department (Dinas PU)

Each district government has a water unit within its public works department (Dinas PU) that is responsible for minor water-related activities, principally involving the management of small irrigation areas under district jurisdiction.

2.2 REGULATION OF BULK WATER-RELATED SERVICES IN INDONESIA

The section below describes the arrangements for and the approach to regulation of the suppliers of bulk water services.

2.2.1 Allocations and Water Use Licenses

Water is currently allocated by mutual agreement among the DGWR, B(B)WSs, and PJTs, based on historical use and according to demands for irrigation, industry, water supply, hydropower, and the flushing of sediments and pollutants from rivers.

Except for the daily basic needs of individuals and small irrigation (with water discharge less than 2l/s/household),²

2. Water Law UU 7/2004, Article 8, paragraph 1.

water users must request a water utilization permit according to the level of management authority for the river basin. This permit is issued to the responsible authority, which, for irrigation systems, depends upon the size of the system.³

Following approval of the water allocation plan by the minister of public works, long-term water permits are issued to large water users—towns, factories, and irrigation areas—but not to individual irrigation farmers. Water allocations are made annually to these large users.

The DGWR instructs the relevant river infrastructure operator, in writing, as to the annual plan. Depending upon the river basin, this could be (1) a PJT or, where there is no PJT, a unit within the B(B)WS; (2) PLN (or an internal unit), as owner and operator of a reservoir for hydropower generation in the river basin; or (3) provincial- or district-level water units, where they operate river infrastructure on lower-level rivers.

The instruction covers the following:

- a. Reservoir releases for downstream uses
- b. Required water deliveries to specific offtakes in the river system
- c. Environmental flow requirements and rules
- d. Reservoir operation under flood conditions
- e. Water-sharing rules under drought conditions
- f. Hydropower station operation

The operator is to monitor and report annual deliveries to the B(B)WS, which checks the reports for compliance with the instruction.

Under Water Law 7/2004, the River Basin (Territory) Strategic Plan (Pola) and River Basin (Territory) Masterplan (Rencana) include long-term water allocation plans among sectors, allowing for future development, demand, and supply. To date, not all river basins have approved strategic plans, although the plans for Brantas and Bengawan-Solo river territories are understood to be nearing completion. A detailed allocation plan is made by the B(B)WS, annually rather than once for a longer period of time, with the allocation rules to be implemented by the local agent. The annual plans are to be approved by the relevant authority⁴ for the river basin, based on advice from the relevant Basin Council.

3. Irrigation Law PP 20/2006, Articles 16, 17, and 18, states that small irrigation systems of less than 1,000 hectares are under the authority of district governments; schemes of 1,000–3,000 hectares are under provincial governments; and schemes of less than 3,000 hectares are under the national government.

4. The authority for national-level river basins (trans-country, trans-province, or national strategic) is the Minister for Public Works; for provincial river basins, it is the provincial governor; and for districts the district mayor.

2.2.2 Tariffs and User Charges

Although B(B)WSs can be river operators and bulk water suppliers, as government agencies within the DGWR they cannot charge for services. As a result, water users do not pay a fee for the operation and maintenance of river infrastructure in a river basin where a B(B)WS is the infrastructure manager. This is also the case for lower-level rivers operated by provincial- or district-level BPSDAs or water units, although a tax based on water use is collected by the provincial government as general government revenue.

The process for establishing the surface water service fee to be charged by a PJT involves the PJT's calculating the total operational cost of water resources management and a surface water service fee (tariff) for each group of water users. This proposal is sent to the Minister of Public Works, with copies provided to the Minister of Private Enterprises (BUMN), the governor, and other relevant officials. It is evaluated by a water tariff evaluation team, established by the MPW and involving other key ministries, and in consultation with water user and provincial stakeholders. Once the fee is agreed on, a decree on the tariff on bulk water for hydropower and/or drinking is issued by the Minister of Public Works.

Guidelines for calculating the cost of water resources management and the surface water service fee have been drafted but have not yet been issued.

2.2.3 Environmental Water Management

River flow, including environmental flows and river flushing, for dam water release conditions is to be specified in the Pola and Rencana and the annual plans and is prescribed (by PP 38/2011) to be greater than the 5 percent minimum natural flow. Flow condition requirements are included in the instruction from the DGWR to the PJT or B(B)WS.

Although the Pola and Rencana address water quality conditions and preservation, impact on the operations of river managers is limited. The environmental agency (provincial), B(B)WS, and provincial water resources agency monitor ambient water quality conditions. The PJT monitors water quality in rivers—for instance, there are 55 monitoring stations in Brantas and 16 in Bengawan Solo.

2.2.4 Flood Management

Flood management is to be included in the Pola and Rencana, with implementation carried out with reference to flood control guidelines established by the MPW. Based on PP 37/2010 on dams, an integrated reservoir management plan and integrated standard operating procedures are prepared by the reservoir manager—that is, the B(B)WS, the PJT, or PLN.

2.2.5 Drinking Water Standards

Drinking water standards are set by the Ministry of Public Health, and they are applied at the level of the retail water supply organization (for example, the PDAM) rather than at the river operator level.

2.2.6 Occupational Health and Safety

Article 47 of PP 42/2008 requires that construction and O&M of water resources infrastructure meet health and safety requirements, as stipulated in the legislation.

2.2.7 Accounting and Financial

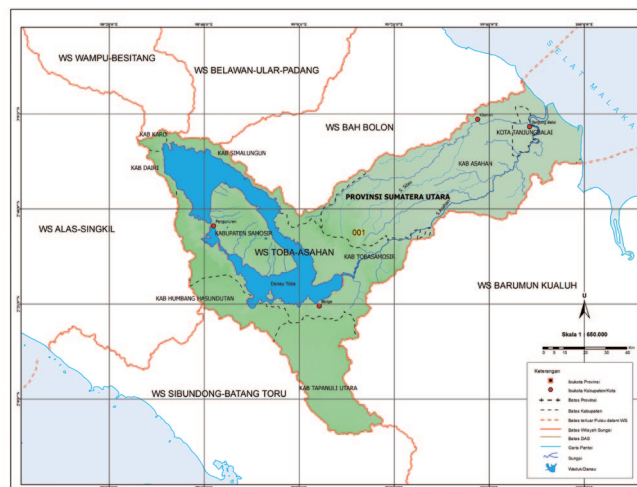
PJTs are required to follow accounting, financial management, and reporting standards and requirements for state-owned enterprises.

2.2.8 Quality Assurance

PJT I follows several International Organisation for Standardisation standards, including ISO 9001 on organizational quality management systems and ISO 17025 for water quality testing laboratories.

FIGURE 3.2

Toba Asahan River Basin, where PJT I operates



Source: Presidential Regulation No. 12/2012 River Basin Areas and Types.

TABLE 3.1

River territories for which PJT I is responsible

WS Number	WS Name	Commencement of PJT I Responsibilities	Responsible B(B)WS	Province	Legislated Basis
17	Brantas	1990	Brantas	East Java	PP 5/1990, PP 93/1999, PP 46/2010
16	Bengawan Solo	2000	Bengawan Solo	East Java and Central Java	Per Pres 129/2000
10	Jratunseluna	2014	Pemali Juana	Central Java	Per Pres 2/2014
14	Serayu Bogowonto	2014	Serayu Opak	Central Java	Per Pres 2/2014
	Toba Asahan	2014	Sumatra II	North Sumatra	Per Pres 2/2014

Source: World Bank (2012) Java Water Resources Strategic Study—Water Security Atlas.

- i. Provision of services to water users so they can utilize surface water resources
- ii. Assurance of provision of water resources to users through the operation and maintenance of infrastructure and the development of water resources that provide direct benefits
- iii. Provision of technical advice to the managers of water resources, in line with their authority for preparing recommendations for the exploitation of water resources
- b. Operational responsibilities and tasks for water resources management:
 - i. Operation of the water resources infrastructure for which the company is responsible
 - ii. Implementation of preventive maintenance, which includes maintenance and minor repairs to the relevant water resources infrastructure
 - iii. Provision of technical advice to water resources managers—for example, B(B)WSs—in line with their authority
 - iv. Rendering of assistance to the government to maintain and secure the water resources and water resources infrastructure to maintain their sustainability
 - v. Emergency maintenance of relevant water resources and water resources infrastructure
 - vi. Rendering of assistance to the government to implement water resources conservation and control the damaging forces of water
 - vii. Water flushing to assist river maintenance
 - viii. Water quantity monitoring and evaluation of quality in water sources for which the company is responsible
 - ix. Dissemination of the results of the monitoring evaluation to users of water resources, the community, and stakeholders
 - x. Provision, with other water resource managers, of guidance and counseling to the community
 - xi. Provision of technical information, advice, and recommendations to water resources managers on the use of water resources

- c. Activities for social services, welfare, and public safety:
 - i. Supply of surface water for the daily basic needs of settlements, including to the authorities responsible for water supply to urban areas as well as small water users, such as villages and individuals, whose water is taken directly from the river
 - ii. Supply of irrigation water to the agricultural community in existing irrigation systems
 - iii. Flood control
 - iv. Conservation of water resources
 - v. Organization of the development of water supply systems and sanitation for household use

PJT I provides the following services to customers:

- a. Supply of water to 13 hydropower plants for the state electricity company (PLN)
- b. Supply of raw water to 20 urban water companies that supply drinking water
- c. Supply of raw water to sugar factories and industries in the Brantas and Bengawan Solo river basins
- d. Supply of raw water for irrigation to 7 B(B)WSs in provincial and district irrigation areas
- e. Flushing of the river for the city of Surabaya
- f. Flood control

BBWS Pemali Juana (WS Jratunseluna)

B(B)WSs are active in all regions where PJT I conducts its operations. Article 55 of Ministerial Order 21/2010 on the organization and functions of the ministry's working units refers to B(B)WS functions in their respective river basin and coastal zone areas as follows:

- a. Preparation of the strategic water resources management plan (Pola) and water resources management plan (Rencana) for the river basin
- b. Preparation and implementation of plans and programs, feasibility studies, technical planning, design, and development of water resources
- c. Control and construction supervision of water resources development
- d. Planning and implementation of water resources management in protected areas
- e. Management of water resources, including the conservation, utilization, and control of the destructive force of the water
- f. Preparation of technical recommendations for the licensing, allocation, use, and exploitation of natural resources
- g. Performance of O&M for water resources, coastal zones, rivers, and irrigation infrastructure (for example, weirs and small reservoirs)

- h. Funding of the provincial dinas to undertake O&M of irrigation systems
- i. Management of hydrological systems
- j. Management of water resources information systems
- k. Rendering of technical assistance for the management of water resources of provinces, districts, and cities
- l. Conducting of facilitation activities through the coordinating team of water resources management in the river basin
- m. Empowerment of communities for management of water resources
- n. Implementation of the collection, receipt, and use of the water resources management services fee (BJPSDA) in accordance with the provisions of laws and regulations⁵
- o. Performance of administrative functions for the B(B)WS

The operational services supplied to customers by B(B)WSs are as follows:

- a. Supply of water to hydropower plants for the state electricity company (PLN)
- b. Supply of raw water to urban water companies/PDAMs for drinking water
- c. Supply of raw water to sugar factories and other industries
- d. Supply of raw water to irrigation operators (BPSDA of province, Dinas PU of districts, water user associations (WUAs) for irrigation)
- e. Flood control

These services overlap with those provided by PJT I.

Provincial Dinas/BPSDA

The functions of the provincial dinas with regard to water resources management are set out in the relevant provincial governors' regulations and are as follows:

- a. Formulation of natural resources technical policy for the governor
- b. Preparation of strategic water resources management plan (Pola), water resources management plan (Rencana), and programs and implementation of facilitation, monitoring, evaluation, and reporting
- c. Management of protected areas and the conservation, utilization, and control of the destructive force of water

5. While this paragraph enables a B(B)WS to collect service fees, a Ministry of Finance regulation (PP 23/2005) limited it to doing so only if it became a BLU and met the required standards.

- d. Implementation of the construction, rehabilitation, development, and operation and maintenance of infrastructure and rivers, reservoirs, and coasts
- e. Implementation of the development, improvement, and rehabilitation, as well as the operation and maintenance, of irrigation infrastructure and raw water
- f. Technical supervision and control of the construction, upgrading, and rehabilitation, as well as the operation and maintenance, of infrastructure, reservoirs, rivers, and coasts
- g. Technical supervision and control of the construction, upgrading, and rehabilitation, as well as the operation and maintenance, of irrigation infrastructure and raw water
- h. Implementation, co-administration, and de-concentration for water resources management
- i. Implementation of technical assistance and facilitation of settlement of disputes between districts/municipalities
- j. Facilitation of the implementation of coordination and cooperation, licensing, and empowerment in water resources management
- k. Organization of the implementation of provincial water resources information systems
- l. Formulation and establishment of and provision of standards for technical advice and their implementation
- m. Implementation of the management of the organization

River basin operational services supplied to customers by the relevant provincial water dinas are as follows:

- a. Supply of raw water to urban water companies/PDAMs for drinking water
- b. Supply of raw water to sugar factories and industries
- c. Supply of raw water to irrigation operators (B(B)WS, Dinas PU of district, WUA)
- d. Flood control

City Department of Water Resources, Energy, and Mineral Resources (Semarang)

The functions of the city water department with regard to water resources management are set out in the mayor's regulations and are as follows:

- a. Formulation of technical policy in engineering, water resources management, energy and geology, water systems and equipment, and pumps
- b. Planning and implementation of the department's program action plan
- c. Permitting/licensing of water allocation

- d. Guidance, monitoring, supervision, and control of implementation, as well as monitoring, evaluation, and reporting duties

- e. Provision of secretariat services for the Department of Water Resources, Energy, and Mineral Resources

River basin operational services supplied to customers by the city are as follows:

- a. Supply of raw water for drinking water to urban water company/PDAM
- b. Supply of raw water for irrigation to irrigation farmers
- c. Flood control

District Water Management Units

Most districts have small water management units within their governments. Their activities with regard to water resources management are minor, however; they are responsible for the management of small irrigation areas and small weirs and gates associated with them but have virtually no role in the management of bulk water and rivers.

3.1.4 Bulk Water Infrastructure Assets

A summary of the many bulk water infrastructure assets in the PJT I area and their management is shown in table 3.2. Each asset is managed by the water agency at the level of government that owns or constructed it. At the national level, different assets may be managed by different agencies. Those under the control of the MPW that have commercial potential are managed by PJT I for assets, and those considered to have no commercial potential, principally because they supply irrigation water, are managed by B(B)WSs. Assets built by the energy sector to provide hydropower are managed by PLN.

Provincial and district governments own some smaller assets, such as weirs and offtakes, and these are operated and maintained by the dinas/BPSDA and district dinas.

Tables 3.2 and 3.3 show that PJT I is responsible for less than 40 percent of reservoirs in the Brantas and Bengawan Solo river territories, with the remainder the responsibility of B(B)WSs.

PJT I, B(B)WSs, and provincial and district dinas are responsible for all weirs and offtakes from the rivers. PJT I charges for service, while B(B)WSs and provincial and district dinas cannot. Provincial and district governments do, however, collect a water tax for general revenue.

Features of the reservoirs are shown in table 3.4.

3.1.5 Tariffs

With the exception of irrigation system operators, bulk water users are charged water user tariffs based on the

TABLE 3.2

Bulk water-related assets in the PJT I area

Water-Related Asset Class	Owner	Operator	Maintainer	Source of O&M Funds
Reservoirs				
Brantas WS 8 reservoirs	National government	PJT I	PJT I	Water users (urban, industry, PLN)
Beng. Solo WS 1 reservoir	National government	PJT I	PJT I	Water users (urban, industry, PLN)
Beng. Solo WS 14 reservoirs	National government	B(B)WS Beng. Solo	B(B)WS Beng. Solo	National government
Toba Asahan WS 1 reservoir	National government (formerly private)	PJT I	PJT I	Water users (industry and urban, PLN)
Hydropower Generating Plants				
Brantas WS 9 hydropower plants*	National government (PLN)	PLN	PLN	PLN customers
Beng. Solo WS 4 hydropower plants	National government (PLN)	PLN	PLN	PLN customers
Mini-hydropower plants	National government (PJT I)	PJT I	PJT I	PLN customers
Offtakes from Reservoir—to Hydropower Plant				
Brantas WS Offtakes from 6 reservoirs	National government	PLN	PLN	PLN customers
Beng. Solo WS Offtake from 1 reservoir	National government	PLN	PLN	PLN customers
Weirs, Gates, and Pump Stations				
Brantas WS	National government (8 weirs, 2 gates, 1 tunnel gate, 1 pump station)	PJT I	PJT I	Water users (urban and industry)
	Province (a few weirs)	BPSDA	BPSDA	Provincial government
	District (a few weirs)	District dinas	District dinas	District government
Bengawan Solo WS	National government 2 weirs	PJT I	PJT I	Water users (urban and industry)
	Province (many weirs)	BPSDA	BPSDA	Provincial government
	District (many weirs)	District dinas	District dinas	District government
Offtakes from River—to Urban and Industry				
Brantas WS 3 offtakes, 1 gate	National government	PJT I	PJT I	Water users (urban and industry)
Beng. Solo WS 1 offtake	National government	PJT I	PJT I	Water users (urban and industry)
Offtakes from River—to Irrigation				
Brantas WS 7 offtakes	National government	PJT I	PJT I	Non-irrigation water users taking from canal
Beng. Solo river WS (number unknown)	National government	PJT I	PJT I	Non-irrigation water users taking from canal

Water-Related Asset Class	Owner	Operator	Maintainer	Source of O&M Funds
Primary Irrigation Canals				
Brantas WS 7 canals	National, Province, District governments	B(B)WS Brantas (5) Prov. (1), Dist. (1)	B(B)WS Brantas	National, province, district governments
Beng. Solo WS 1 canal	National government	B(B)WS Beng. Solo	B(B)WS Beng. Solo	National government
Secondary Irrigation Canals				
Brantas WS 7 canals	National, Province, District governments	B(B)WS Brantas (5), Prov. (1), Dist. (1)		National, province, district governments
Beng. Solo WS 1 canal	National government	B(B)WS Beng. Solo	B(B)WS Beng. Solo	National government
Rivers and Flood Levees				
Brantas WS 5 river levee systems	National government	PJT I	PJT I	Water users

Source: Annual Reports, PJT I.

* Includes mini-hydro and run-of-the-river hydropower plants.

TABLE 3.3

Summary of operators of mainstream infrastructure in Two River territories

River Territory	Mainstream Structure	PJT I Operator	B(B)WS Operator	Provincial and District Dinas
Brantas	Reservoirs	8	0	—
	Weirs and gates	10	—	Many
Bengawan Solo	Reservoirs	1	14	—
	Weirs and gates	2	—	Many

Source: Annual Reports, PJT I.

annual decision of the Minister of Public Works for infrastructure operated by PJTs and the provincial governor and the district or city mayor for infrastructure owned by the respective governments.

In this way, the end user might end up paying a charge that is partly national (for example, for the O&M of national infrastructure) and partly from lower-level government (for infrastructure owned by a lower-level government and operated by a PDAM).

PJT 1 customers who are charged for water use and the increases in water charges over the period of 2011–2014 are listed in table 3.5 and table 3.6 respectively.

3.1.6 Financing of River Basin Operations

River basin operations are implemented by the B(B)WSs, PJT I, and provincial river basin organizations or departments. PJT I revenue comes from customers receiving services. B(B)WSs are funded by the government budget through the MPW, and provincial river basin management units and water departments are funded by the provincial governments. Some purchasing of services by B(B)WSs from PJTs and provincial units takes place through MOUs.

3.1.7 Funding of the Public Good Element of Operation and Maintenance

Some infrastructure has been constructed and is operated for the benefit of sectors considered unable to pay for services. The Water Law 7/2004, Article 78 and 79, states that the irrigation sector is not to pay for water services. The result is infrastructure built for that purpose not receiving adequate operation and maintenance.

To avoid this and the inevitable rundown of infrastructure, government regulation 42/2008, Article 117, states the government will fund O&M where the customer is unable to do so or where the law precludes it. Although payment was apparently made to PJT I once (in one year) for this purpose, currently such payments are not made by the government.

3.1.8 Agreements between PJT I and Government

The PJT I has agreements (shown in table 3.7) with the MPW and two relevant B(B)WSs to harmonize the operation and maintenance activities in the two river basins.

TABLE 3.4

Features of reservoir operated by PJT I and related B(B)WSs

Brantas WS	Reservoir Name	Capacity (mill. m ³)	Collectable Revenue Source
PJT I operated	8		
	Lodoyo	5.2	Yes
	Sutami	343	Yes
	Lahor	36.1	Yes
	Wlingi	24.0	Yes
	Selorejo	62.3	Yes
	Wonorejo	122.0	Yes
	Bening	28.4	Yes
	Sengguruh	23.0	Yes
BBWS Brantas operated	0		
Beng. Solo WS			
PJT I operated	Wonogiri	560.0	Yes
B(B)WS Beng. Solo operated	14		
	Nawangan	0.8	Yes but NA*
	Ngancar	2.05	Yes but NA
	Song Putri	0.725	Yes but NA
	Plumbon	1.05	Yes but NA
	Parangjoho	1.76	Yes but NA
	Krisak	3.717	Yes but NA
	Cengkelik	9.773	Yes but NA
	Delingan	3.27	Yes but NA
	Ketro	2.8	Yes but NA
	Pacal	41.18	Yes but NA
	Prijetan	12.1	Yes but NA
	Gondang	25.9	Yes but NA
	Tlogo Ngebel	23.5	Yes but NA
	Pondok	30.9	Yes but NA
Toba Asahan WS			
PJT I operated	1 reservoir (lake)		Yes

Source: Annual Reports, PJT I.

* While some water users may be charged for service from these reservoirs, the B(B)WS is unable to collect the revenue.

3.1.9 Operating Agreements/Licenses with Customers

Table 3.8 shows the range of operating agreements governing PJT I's supply of water to its customers.

3.1.10 Customer Advocacy

The Indonesian Consumer Agency Foundation is a formal customer service committee at the national level with the following mission:

TABLE 3.5

Customers charged for water use

Customer	Comment
Urban water supply companies	This is the charge to towns for water received from PJT I. It is a block-based volumetric use charge.
Hydropower plant operators	This is the PJT I charge to the operator of hydropower plants on its reservoirs and is based on electricity generated.
PLN as recipient of electricity generated by PJT I-operated power plants	This is the price PJT I receives when it sells electricity to PLN, according to their agreement.
Industry	This is the charge to towns for water received from PJT I.
Agriculture	The Water Law prohibits charging for agricultural water use.
Tourism and recreation	These are charges to users of facilities, such as entrance fees, hotel charges, cottage rentals, and so on.

Source: Annual Reports, PJT I

- To act as a consumer advocate
- To facilitate the formation of consumer groups
- To encourage community involvement as a public policy watchdog
- To anticipate global policies that affect consumers

No formal customer service committees provide ongoing feedback on services, service standards, or their review to PJT I and B(B)WSs. Customers are consulted, however, in the making of annual water allocation plans by B(B)WSs.

Central and local government agencies, PJT I, and B(B)WSs have water information systems that enable the public to comment on their services. Several groups have also used these systems and social media to send feedback to the president, the governors, and the agencies concerned.

3.2 THE PERUM JASA TIRTA (PJT) II REGION

The following sections provide a summary of PJT II's service area, roles, services and customers, governance structure, and agreement with the government and customers, as well as the river infrastructure it manages and financing arrangements.

3.2.1 Geographical Area of Responsibility

The PJT II geographical area of responsibility comprises the Citarum river territory with a small part of the eastern Ciliwung-Cisadane river territory in West Java; the western part of the Ciliwung-Cisadane river basin (but not the central part around Jakarta); and parts of the Cidanau and Ciliman river basins in Banten Province (see figure 3.3). The BBWSs responsible for these areas are the BBWS Citarum,

TABLE 3.6

PJT I water fees and increases in water charges/fees

Year	PLTA (Hydropower)			Urban (PDAM)			Industry			Tourism
	Reservoir	Rp/kWh	Fee increase (%)	Province	Rp/m ³	Fee Increase (%)	Water Use (m ³)	Rp/m ³	Fee Increase (%)	
2011	WS Bengawan Solo	149.94		Central Java	112		<10,000	196		✓
	WS Brantas	130.92		East Java	84.5		10k–100k	198.5		✓
							100k–500k	201		
							500k–1m	203.5		
							>1m	206		
2012	WS Bengawan Solo	183.56	22%	Central Java	112		<10,000	216.07	10%	✓
	WS Brantas	149.37	14%	East Java	112	33%	10k–100k	218.57	10%	✓
							100k–500k	221.07	10%	
							500k–1m	223.57	10%	
							>1m	226.07	10%	
2013	WS Bengawan Solo	202.58	10%	Central Java			<10,000	226.15	5%	✓
	WS Brantas	151.91	2%	East Java			10k–100k	228.65	5%	✓
							100k–500k	231.15	5%	
							500k–1m	233.65	5%	
							>1m	231.15	2%	
2014	WS Bengawan Solo	213	5%	Central Java	128.8	15% (/2y)	<10,000	249	10%	
	WS Brantas	160.5	6%	East Java	133	19% (/2y)	10k–100k	251.5	10%	
							100k–500k	254	10%	
							500k–1m	256.5	10%	
							>1m	259	12%	

Source: Finance Department, DGWR.

TABLE 3.7

List of agreements between PJT I and government agencies

Subject of Agreement	Purpose of Agreement	Other Party
Tariff for water supply services for PDAM, hydropower, and industry	Statement of approved tariffs	Ministry of Public Works
Setting of 2014 O&M activities in Brantas River Basin	Synchronization of operation and maintenance activities in the Brantas river basin	BBWS Brantas
Setting of 2014 O&M activities in Bengawan Solo River Basin	Synchronization of operation and maintenance activities in the Bengawan Solo river basin	BBWS Bengawan Solo
(Informal) annual water allocation	Annual allocation for delivery of water	BBWS Brantas and BBWS Bengawan Solo

Source: Law Department, DGWR.

the BBWS 3Ci (Cidanau-Ciujung-Cidurian RB), and the BBWS 2Ci (Ciliwung-Cisadane RB).

3.2.2 Legislated Basis and Features

A public enterprise authority for Jatiluhur reservoir and irrigation system was established by PP 20/1970 under the Ministry

of Public Works and Electric Power. In 1990, PP 42/1990 transformed the public enterprise authority into a general corporate authority, in compliance with PP 28/1983.

In 1994, this was changed by Regulation 94/1999 to a public service company for water (Perum Jasa Tirta 2, or PJT II) with a working area of the Citarum river basin and part of

TABLE 3.8

List of agreements between PJT I and customers

Subject of Agreement	Purpose of Agreement	Customer
Raw water supply for drinking	For the supply of drinking water	PDAMs of 19 districts/cities
Raw water supply for drinking	For the supply of drinking water	Water supply company
Water supply for power generation	Supply of water for electrical energy from hydropower	14 separate agreements with PLN for power generation at Sengguruh, Sutami, Wlingi, Sengguruh, Lodoyo, Selorejo, Mendalan, Siman, Tulungagung, Wonogiri, Wonorejo, Giringan, Golang, and Ngebel hydropower plants
Water supply for industry	Water supply to meet the needs for industrial water	Multiple agreements separately with industrial estates and factories
Water supply for sugar factories	Water supply to meet the needs of sugar factories for water	Agreements for water supply with sugar factories

Source: Annual Reports, PJT I.

FIGURE 3.3

River basins considered for expansion of PJT II responsibilities



Source: World Bank (2012) Java Water Resources Strategic Study—Water Security Atlas.

the eastern portion of the Ciliwung-Cisadane river basin, in addition to the Jatiluhur reservoir.

PP 7/2010 added the western part of the Ciliwung-Cisadane river basin (but not the central part), and the Cidanau and Ciliman river basins in Banten Province. The regulation also compelled PJT II to comply with laws 19/2003 and PP 45/2005 on state-owned enterprises.

3.2.3 Roles, Services, Customers of Involved Institutions

Perum Jasa Tirta (PJT) II

The duties and responsibilities of PJT II are defined in PP 7/2010 and include the following:

- a. Duties and responsibilities related to the utilization of water resources:
 - i. Provision of services to guarantee water supply, with a fixed priority on daily basic needs and agricultural irrigation in the existing irrigation system
 - ii. Utilization of surface water resources to meet the needs of the hydroelectric power plant
 - iii. Rendering of assistance to the government in granting permits for water use and exploitation
- b. Duties and responsibilities related to the management of the river territory water resources:
 - i. Operation and maintenance of water resources infrastructure, including the opening and closing of sluice gates, the building of infrastructure, the calibration of gauges, monitoring, and the evaluation of water flows and use
 - ii. Operation of a network of primary irrigation and associated infrastructure in the North and South Jatiluhur irrigation area
 - iii. Operation of a network of secondary irrigation and associated infrastructure in the North and South Jatiluhur irrigation area
 - iv. Maintenance of water sources, including safeguarding and securing the source of water to maintain its sustainability
 - v. Performance of maintenance on the primary irrigation canal for the North and South Jatiluhur irrigation area⁶
 - vi. Monitoring and evaluation of the quantity and quality of water in water sources for which the company is responsible
 - vii. Disseminating the results of monitoring and evaluation to water users and the community
 - viii. Assisting the government in the conservation of water resources and control of water disasters
 - ix. Flushing and dredging for river maintenance
 - x. Raising the awareness of the community to improve community empowerment

- c. Services provided for social services, welfare, and public safety in the working area include the following:
 - i. Supply of surface water for daily basic needs
 - ii. Supply of irrigation water to the agricultural community in the existing irrigation system
 - iii. Flood control
 - iv. Conservation of water resources
 - v. Development of water supply systems (Sistem Penyediaan Air Minum, or SPAM) and sanitation for household use

PJT II provides the following specific services:

- a. Supply of water to three hydropower plants for electricity production, comprising 187.5 MW for Juanda, operated by PJT II; 1,008 MW for Cirata, operated by PLN; and 797.96 MW for Saguling, operated by PLN
- b. Supply of raw water for drinking water to five city water companies/PDAMs (Bekasi, Jakarta, Krawang, Purwakarta, and Subang) and six urban water companies/PDAMs (Kabupaten Bandung, Kabupaten Bekasi, Kabupaten Bogor, Kabupaten Krawang, Kabupaten Purwakarta, and Kabupaten Subang)
- c. Supply of raw water to about 227 industries, including the Pertamina Balongan oil company, the Kujang fertilizer company, and textile industries in Kabupaten Bekasi and Kabupaten Krawang
- d. Supply of raw water to Jatiluhur irrigation area for irrigation of 242,000 hectares of paddy fields in Krawang and Bekasi
- e. Flushing the river for the cities of Bekasi, Jakarta, and Krawang
- f. Flood control

BBWS Citarum

Article 55 of Ministerial Order 21/2010 on the organization and functions of the working units of the MWP lists BBWS functions in their respective river basin and coastal zone areas as follows:

- a. Preparation of the strategic water resources management plan (Pola) and water resources management plan (Rencana) in the river basin
- b. Preparation and implementation of plans and programs, feasibility studies, technical planning, design, and development of water resources
- c. Control and supervision of construction for water resources development
- d. Planning and implementation of water resources management for protected areas
- e. Management of water resources, including the conservation, utilization, and control of the destructive force of the water

6. The provincial water dinas provides maintenance for the secondary system of the North and South Jatiluhur irrigation area.

- f. Preparation of technical recommendations for the licensing, allocation, use, and exploitation of natural resources
- g. Operation and maintenance of water resources, coastal zones, rivers, and irrigation infrastructure (for example, weirs and small reservoirs)
- h. Funding of provincial dinas to undertake the maintenance of the secondary canals of the Jatiluhur irrigation area and the operation and maintenance of other irrigation systems
- i. Management of the hydrological monitoring system and early flood warning system
- j. Management of the water resources information system
- k. Provision of technical assistance for the management of water resources by provinces and districts/cities
- l. Conducting of facilitation activities through the coordinating team of water resources management in the river basin (basin council)
- m. Empowerment of communities for the management of water resources
- n. Implementation of the collection, receipt, and use of the water resources management services fee (BJPSDA), in accordance with the provisions of laws and regulations⁷
- o. Performance of administrative functions for the BBWS

PJT II provides services to customers as follows:

- a. Supply of raw water to small bottled drinking water companies
- b. Supply of raw water to small industries
- c. Supply of raw water to districts and farmers for irrigation
- d. Flood control

Provincial Dinas/BPSDA West Java

The tasks and functions of the East Java Water Dinas are set out in the governor's regulations. The task of the provincial water dinas is to implement the government's water affairs based on the principles of autonomy, deconcentration,⁸ and assistance. Its functions are the following:

- a. Proposal and implementation of policy for the management of water resources
- b. Provision of guidance for the technical implementation of water resources, which includes engineering, coaching, and operation and maintenance
- c. Implementation of investment facilitation and utilization of water resources
- d. Provision of advice on technical considerations of water use and water resources, as well as implementation of public service management of water resources
- e. Facilitation of the implementation of water resources management
- f. Monitoring, control, and evaluation of water resources management
- g. Performance of the duties of the secretariat

It provides services to customers as follows:

- a. Supply of raw water for drinking water to urban water companies
- b. Supply of raw water to small industries
- c. Supply of raw water for irrigation to water user associations in the Jatiluhur system
- d. Flood control

3.2.4 Bulk Water Infrastructure Assets

Table 3.9 shows a summary of the bulk water infrastructure assets in the PJT II area and their management.

The table shows PJT II is responsible for 33 percent of the large reservoirs but none of the many small reservoirs that are managed by the B(B)WSs and provincial dinas. PJT II, however, is responsible for a few of the weirs and gates and all offtakes and for all primary canal systems. In addition, in an unusual approach to management, PJT II is responsible for the operation of about 25 percent of secondary canal systems, with the provincial dinas responsible for their maintenance and for the operation and maintenance of the remaining 75 percent.

Table 3.10 lists the main operators of infrastructure in the PJT II area, while table 3.11 details the responsibilities for operation of the main reservoirs.

7. While this paragraph enables a B(B)WS to collect service fees, a Ministry of Finance regulation (PP 23/2005) limited it to doing so only if it became a BLU and met the required standards.

8. In the context of the unitary state of Indonesia, the transfer of authority between central and local governments is addressed in UU32/2004 (art 20) on regional government, and is based on three patterns:

Decentralization: The transfer of power by the government to the autonomous region government to regulate and administer the affairs of government in the system of the Republic of Indonesia.

Deconcentration: The delegation of government authority by the government to the governor as representatives of the central government and/or the vertical institutions in a particular region.

Coadministration: The assignment from a higher- to a lower-level government to carry out a specific task or assignment, with funding and other resources going from the higher-level government to lower-level governments and/or villages; from provincial governments to the district/city and/or the village levels; and from the district/city government to villages.

TABLE 3.9

Bulk water–related assets in the PJT II area

Water-Related Asset Class	Owner	Operator	Maintainer	Source of Funds for O&M
Reservoirs				
1 reservoir	Nat. gov. (MPW)	PJT II	PJT II	Water users (urban and industry, PLN)
2 reservoirs	Nat. gov. (PLN)	PLN	PLN	PLN customers
106 small reservoirs	Nat. gov. (MPW)	B(B)WS	B(B)WS	National government
17 small reservoirs	Prov. gov.	BPSDA	BPSDA	Provincial government
Hydropower Generating Plants				
1 hydropower plant	Nat. gov. (MPW)	PLN	PLN	PLN customers
2 hydropower plants	Nat. gov. (PLN)	1 PT Java-Bali (business unit of PLN) 1 PT Indonesia Power (business unit of PLN)	1 PT Java-Bali 1 PT Indon. Power	PLN customers
Weirs/gates				
2 weirs (for irrigation)	Nat. gov. (MPW)	PJT II	PJT II	PJT II nonirrigation customers (e.g., electricity, towns)
34 weirs/gates	Prov. gov.	BPSDA	BPSDA	Prov. government
Offtakes from Reservoir—to Hydropower Plant				
1 hydropower plant offtake	Nat. gov. (MPW)	PJT II	PJT II	PLN customers
2 hydropower plant offtakes	Nat. gov. (PLN)	1 business unit of PLN 1 PT Indonesia power	1 PT Java-Bali 1 PT Indon. Power	PLN customers
Offtakes from River—to Industry				
102 offtakes	Nat. gov. (MPW)	PJT II	PJT II	Water users (urban and industry, PLN)
Offtakes from River—to Irrigation				
3 offtakes (1 gravity, 2 pumps)	Nat. gov. (MPW)	PJT II	PJT II	PJT II nonirrigation customers
Primary Irrigation Canals				
3 primary canal systems	Nat. gov. (MPW)	PJT II	PJT II	PJT II nonirrigation customers
34 primary canal systems	Prov. gov.	Prov. dinas	Prov. dinas	Prov. government
Secondary Irrigation Canals				
10 secondary canal systems	Nat. gov. (MPW)	PJT II	Prov. dinas	PJT II nonirrigation customers
34 secondary canal systems	Prov. gov.	Prov. dinas	Prov. dinas	Prov. government
Flood Levees				
1 flood levee system	Nat. gov. (MPW)	B(B)WS Citarum and PJT II	B(B)WS Citarum	B(B)WS Citarum

Source: Annual Reports, PJT II.

3.2.5 Tariffs

With the exception of irrigation system operators, bulk water users are charged water user tariffs based on the annual decision of the Minister of Public Works for infrastructure operated by PJT II and the provincial governor and district or city mayor for infrastructure owned by the respective governments.

Tariffs charged to PJT II customers are shown in table 3.12.

3.2.6 Financing of River Basin Operations

River basin operations are implemented by the B(B)WSs, PJT II, and provincial river basin organizations or departments. PJT II revenue comes from customers receiving services. B(B)WSs are funded by the government budget through the MPW, and provincial river basin management units and water departments are funded by the provincial government. Some purchasing of services by B(B)WSs from PJT II and provincial units takes place through MOUs.

TABLE 3.10

Summary of operators of mainstream infrastructure in PJT II area

Mainstream Structure	PJT II Operator	PLN	B(B)WS Operator	Provincial Dinas (BPSDA)
Reservoirs	1	2	—	—
Small reservoirs	—	—	106	17
Weirs/gates	10	—	—	34
Offtakes	102	—	—	—
Primary canal systems	3	—	—	—
Secondary canal systems	10	—	—	34

Source: Annual Reports, PJT II.

TABLE 3.11

Reservoirs operated by PJT II and related parties

Operator	Reservoir Name	Capacity (mill. m ³)	Collectable Revenue Source for PJT II
PJT II operated			
	Jatiluhur	2,450	Yes
PLN operated			
	Saguling	875	No
	Cirata	2,165	No
B(B)WS operated			
	106 small reservoirs	0.10–9	No
BPSDA			
	17 small reservoirs	0.10–5	No

Source: Annual Reports, PJT II.

3.2.7 Agreements between PJT II and Government

Agreements between PJT II and other agencies are shown in table 3.13.

3.2.8 PJT II Operating Agreements with Customers

Table 3.14 lists the agreements PJT II has with its customers.

3.2.9 Issues Related to Recovery of Water Service Costs

Government regulation 42/2008, Article 117, indicates the government will fund O&M where the customer is unable to do so or where the law precludes this—for example, per Water Law 7/2004, Article 78 and Article 79, which states the irrigation sector is not to pay for water services. Currently, the government does not fund O&M where charges are inadequate.

3.3 COMPARATIVE ASSESSMENT FOR THE STUDY BASINS

3.3.1 Responsibilities for River Basin Operations Undertaken in the Case Study Areas

Provision of river basin operations in the case study river basins is summarized in table 3.15.

The three most significant differences in the service functions of PJTs I and II are that (1) PJT II is required to maintain irrigation infrastructure where PJT I does not; (2) PJT II has not earned fees for raw water used by hydropower units within its service area and is in dispute with PLN, despite the authorization for “fee for water resources” by the Minister of Employment Decree No. 56/KPTS-/M/2013; and (3) in addition to its core and noncore services, PJT II provides electricity services through the operation of the 187.5 MW Juanda Hydroelectric Power Plant in Jatiluhur and several other mini-hydro installations. Part of the electricity production is used to meet the company’s own needs, while the rest is sold to PLN.

The role of the regulator is filled by the Minister of Public Works, with advice from the DGWR. This raises some issues of independence and propriety, as the B(B)WSs are a unit of the DGWR and provide some of the same services as the PJTs. The DGWR also sits on the supervisory board of the PJT, thereby weakening the independence of the DGWR as the regulator.

As the B(B)WSs are both basin managers and river operators for mostly small river infrastructure, these two different roles could be best managed by transferring the river operator role to PJT. Where this is not possible, a separate ring-fenced business unit that operates river infrastructure and provides other bulk water services should be established, with separate financial accounts and reporting. The B(B)WSs are constrained in their infrastructure management role by their inability to collect fees from water users.

PLN business units are also operators of large reservoirs, bringing into possible conflict the interests involved in operating reservoirs for hydropower with those involved in operating them for flood and drought control. While this could potentially be managed through closely controlled and enforced operating agreements, coordination of operations in times of crisis for reservoirs that are separately owned is notoriously difficult.

3.3.2 PJT and B(B)WS Performance in River Basin Operations

Recorded reviews or assessments of the performance of PJTs or B(B)WSs seem to be surprisingly few, particularly given the interest in rationalizing and better delivering river basin operational services.

TABLE 3.12

Annual water fees charged by PJT II by annual decision of MPW minister

Year	PLTA (Hydropower)		Fee Increase (%)	PDAM Jakarta Rp/m ³	Fee Increase (%)	PDAM West Java		Fee Increase (%)	Industry West Java Rp/m ³	Fee Increase (%)
	Reservoir	Rp/kWh				Item	Rp/m ³			
2011		nil		172		Fee	65.26		106.46	
2012		nil		181	5%	Fee	81.38	25%	141.69	33%
						Surcharge: for a purpose-built canal	24.73		24.73	
2013	PLTA Djuanda	85.28		189.65	5%	As above	As above	nil	As above	0%
	PLTA Saguling	14.01						nil		
	PLTA Cirata	45.69						nil		
2014	As above	As above	nil	202.65	7%	Fee	98.3	21%	165.5	17%
						Surcharge: for a purpose-built canal	28.22		28.22	14%

Source: Finance Department, DGWR.

TABLE 3.13

Agreements between PJT II and government agencies

Subject of Agreement	Purpose of Agreement	Other Party
Tariff of water resource management services for PDAM, hydropower, and industry	Statement of approved tariffs	Ministry of Public Works
Development and management of irrigation network in Jatiluhur	Synchronization program to avoid overlapping programs	B(B)WS and Dinas PSDA, West Java
Formation of coordinating team for operation of cascade dam Saguling, Cirata, and Juanda/Jatiluhur	To regulate water supply for various purposes and for power generation	DGWR
Annual water allocation	To prescribe annually the water deliveries to be made to water users	PJT II still makes and implements the annual water allocation at this stage

Source: Law Department, DGWR.

TABLE 3.14

Agreements between PJT II and customers

Subject of Agreement	Purpose of Agreement	Customer
Raw water supply of drinking water	Drinking water supply	Separate agreements with six PDAMs (Bandung, Bekasi, Bogor, Jakarta, Krawang, Subang)
Raw water supply of drinking water	Drinking water supply	Real estate/housing
Raw water supply for industry	Water supply for industries	About 200 various factories (textile, paper, tire, tile, etc.)

Source: Annual Reports, PJT II.

A face to face discussion of river basin operational issues was held with BBWS Bengawan Solo. The BBWS shares its river territory area with PJT I, to which it contracts O&M for some of its infrastructure in the basin while retaining management responsibility for small structures. Findings from the discussion indicated the following:

- The PJT I supervisory board places a high priority on profit, with activities that do not generate it receiving lower priority. PJT I may also be reluctant to take a subsidy from the government, as it would then have to comply with government audit requirements.

TABLE 3.15

Primary activities and responsibilities for river basin operation

Activity	DGWR	B(B)WS	PJT I	PJT II	Other
Regulator					
Overall river basin governance	Standards, oversight with NWRC				
Water allocation	Standards, oversight	Via RB plans			
Water quality		Via RB plans			MoEnv; Min. Health
Water service fees	Standards, ministerial approval		Recommends to minister	Recommends to minister	
Public complaints					
River basin manager					
River basin governance		Yes, with TKPSDA			Prov.; dist.
Monitoring of water conditions		Yes			Prov. via MOU with B(B)WS
River basin plans and policies		Yes			Prov.; dist.
Water allocations		Yes			Prov.; dist.
Water quality		Yes, ambient			MoEnv; poll. control
Program implementation		Yes			
Bulk water provider					
Monitoring of water conditions		Yes, flows, quality	Implementation via MOU with B(B)WS	Implementation via MOU with B(B)WS	Prov.; dist.
Water supply		Yes	Implementation via MOU with B(B)WS	Implementation via MOU with B(B)WS	Prov.; dist.
Water quality		Yes	Implementation via MOU with B(B)WS	Implementation via MOU with B(B)WS	Prov.; dist.
O&M of infrastructure		Yes	Yes	Yes	Prov.; via MOU with B(B)WS
Construction management		Yes			Prov.; dist.
Flood levees and flood mitigation		Yes	Yes	Yes	Prov.; dist.
Program implementation		Yes	Yes, self-funded watershed works		
Collects water fees			Yes	Yes	
Retail service provider					
Hydropower			Yes	Yes	PLN bus. units
Irrigation water supply		Yes		Yes	Prov. MOU with B(B)WS; dist.
Urban water supply					Prov.; dist.
Environment		Yes	Yes	Yes	Prov.

Source: Discussions with DGWR and PJTs.

b. The responsibility division between PJT I and the BBWS is often unclear in terms of O&M for non-revenue-generating infrastructure, such as flood protection facilities, water supply barrages, and some weirs. As these assets do not generate revenue, they are not properly maintained; for instance, the much-reduced capacity of an important flood canal has rendered it incapable of coping with design floods.

c. While an operating agreement is in place for flood releases from the major reservoir for which PJT I is responsible, it is not always followed, as the PJT wishes to maximize its revenue from hydropower generation. The BBWS has no means to enforce the operating agreement.

d. The Ministry of Public Works, which has traditionally been construction oriented, does not give sufficient attention to wider management, including O&M.

- e. Although responsible for the O&M for a large portion of the infrastructure, the BBWS allocates only a very small part of its budget for this purpose.

A discussion with BBWS Permali-Juana addressed potential sources of revenue from water users for a possible expansion of the PJT model. While full access to cost data was not available, the discussion revealed that the revenue potential from industrial and urban water users and hydro-power can support not only operations of the Serang-Luci basin, but also the O&M of the other basins deemed unprofitable on their own, as well as being sufficient to pay a concession fee back to government or otherwise contribute to a central O&M fund.

In 2008, a pilot assessment of eight organizations involved in river basin management was undertaken using the NARBO Indicators for Benchmarking Performance of RBOs, with the findings reported in 2009.⁹ The organizations participating included PJTs I and II; BBWS Brantas; BBWS Cidanau Ciujung Cidurian; BPSDA Ciujung Cidanau; and BBWS Citarum. A self-assessment of performance against indicators was followed by peer review to try to standardize the results, which are shown in table 3.16. It

is relevant to note that at the time of the assessment, the BBWSs had only been active for two years and so were at an early stage of their establishment.

Although the activities included in the benchmarking assessment were wider than the operational aspects of river basin management, some aspects it investigated were relevant to this study, and it produced some broadly consistent findings with relation to operational aspects. First, PJT I was rated as performing significantly better than all the other organizations. Second, O&M was found to be a weakness, especially for the BBWS and the BPSDA and for PJT II. This was mostly attributed to the lack of financing for the BBWS whereas the PJT's revenue source was independent of government. Lack of technical skills was also identified as an issue.

For many years since the formation of PJT I in 1990, its management of the Brantas river basin has been seen as very well performing, and it is often promoted, especially through the Network of Asian River Basin Organisations, as an example of an excellent RBO. The World Bank analyzed the PJT I Brantas river basin management approach to draw lessons for others (Bhat et al. 2005). Overall, it found PJT I was successful in fulfilling its mandated responsibilities, and this was recognized by stakeholders. A factor in its success was the creation of a state-owned, semi-profit-making corporation with clear objectives for management,

9. DHV BV, Delft Hydraulics, PT Mitra Lingkungan Dutaconsult 2009, 53.

TABLE 3.16

Summary of RBO performance assessment

Objectives	Indicators	PJT I	PJT II	BBWS Brantas	BBWS Cidanau Ciujung Cidurian	BPSDA Ciujung-Cidanau	BBWS Citarum
	Established	1990/99	*	2006	2006	1994/98	*
Integrated water resources management	1-1. RBO status	63%	63%	75%	50%	63%	63%
	1-2. RBO governance	75%	75%	56%	50%	50%	50%
Customer Satisfaction	2-1. Customer involvement	88%	88%	50%	75%	63%	63%
	2-2. Customer feedback	50%	88%	63%	63%	63%	63%
Environmental conditions	2-3. Environmental audit	63%	63%	75%	63%	50%	38%
Livelihoods	2-4. Basin livelihoods	88%	38%	50%	50%	25%	38%
Human resources	3-1. HR development	88%	75%	63%	75%	75%	75%
Asset management	3-2. Technical develop.	88%	50%	75%	50%	63%	50%
Systems development	3-3. Organisational develop.	75%	75%	63%	50%	63%	63%
Business planning	4-1. Planning maturity	75%	50%	63%	50%	63%	50%
Natural resources mgmt.	4-2. Water allocation	75%	63%	63%	50%	50%	50%
Information mgmt.	4-3. Data sharing	75%	50%	63%	50%	63%	38%
Financial independence	5-1. Cost recovery	75%	63%	0%	0%	0%	0%
Financial performance	5-2. Financial efficiency	75%	75%	75%	75%	63%	25%
Overall Rating		75%	65%	59%	54%	54%	47%

Source: DHV & Associates, April 2009.

rather than water infrastructure development, focused on balancing revenue and expenditure. In particular, the report noted the superiority of PJT I's performance compared with that of Balais in providing for O&M, which it attributed mostly to PJT I's ability to recover costs. The report also noted the important steps taken by the central

government in using the PJT model to decentralize its delivery of water management services and went on to remark that this had resulted in some confusion regarding overlapping responsibilities of the central government and provincial and local agencies. In many ways, the issues the report identified remain unresolved today.

FINANCIAL ASSESSMENT OF PJT OPERATIONS

4.1 THE PJT I ASSESSMENT

4.1.1 Bulk Water Services

A detailed description of PJT I water resources management responsibilities and arrangements, including arrangements for assets, tariffs, and operating agreements, was presented in section 3.1. PJT I earns most of its revenue by providing raw water services for hydropower stations, utilities, and industry, with the greatest proportion coming from the Brantas river basin.

Table 4.1 provides a summary of the bulk water production for the five-year period 2009–13. Water services for hydropower are charged on a kWh basis, while bulk water to PDAMs and industry are charged on a per m³ basis. Total annual water production for power has ranged between 1.1 billion and 1.6 billion kWh during the period. The fluctuation is largely due to water resource availability, and 2010 and 2013 were particularly wet years, while rainfall amounts

in the other years were more average. Water services for the water utilities and for industry did not fluctuate in the same way but rather grew gradually, with consumption rising from 493 million m³ in 2009 to 587 million m³ in 2013, or a 19.1 percent increase over the five years.

4.1.2 Revenue and Profit Results

Table 4.2 shows the company's operating highlights for 2009–13.

Operating results grew sharply over the five years due to a combination of factors, including high rainfall amounts in 2010 and 2013 and some significant tariff increases over the entire period (see table 3.6). During the period from 2009 to 2013, operational revenue rose more than twofold, from Rp 147.0 billion to Rp 332.6 billion, or an average of 25 percent annually. The largest jump came between 2009 and 2010 as a result of increased water services to power units. Since 2010, the growth has averaged about 14.1 percent annually.

TABLE 4.1

PJT I water service production, 2009–2013

(in million units)	2009	2010	2011	2012	2013
PLN hydropower (kWh)					
Brantas	997	1500	1143	1032	1261
Solo	77	106	104	69	80
Total hydropower	1074	1607	1246	1101	1341
Bulk water to PDAMs and industry (m³)					
PDAMs					
Brantas	299	316	343	353	358
Solo	10	15	17	19	22
Subtotal	309	331	360	372	380
Industry					
Brantas	149	164	148	159	168
Solo	35	39	35	37	39
Subtotal	184	203	183	196	207
Bulk water to PDAMs and industry					
Brantas	448	480	491	512	526
Solo	45	54	53	56	61
Total bulk water to PDAMs and industry	493	534	543	568	587

Source: Annual Reports, PJT I, 2009–13.

TABLE 4.2

PJT I summary operating results, 2009–13

(in million RP)	2009	2010	2011	2012	2013
Operational revenue	147,039	261,095	259,659	283,295	332,625
Operating expenses	126,354	192,998	209,055	220,859	244,394
Profit (Loss) from operations	20,685	68,097	50,604	62,436	88,232
Operating external income	4,562	4,366	7,233	9,612	10,725
Operating expense outside	3,409	6,808	1,551	4,467	13,951
Profit (Loss) outside enterprises	1,153	(2,442)	5,682	5,145	(3,227)
Commission income					
Commission expense					
Profit (Loss) KPU					
Bag. loss log Co.		(189)	(165)	181	—
Profit (Loss) before tax	21,838	5,466	56,121	67,762	85,005
Corporate income taxes	5,324	5,266	12,685	15,378	18,550
Profit (Loss) after tax	6,514	50,201	43,437	52,384	66,455
Other comprehensive revenue				(1,238)	(6,000)
Related income tax				(310)	(1,500)
Other income (Loss)				(929)	(4,500)
Total comprehensive income	16,514	50,201	43,437	51,455	61,955

Source: Annual Reports, PJT I, 2009–13.

By contrast, operational expenses grew by only 93 percent from 2009 to 2013, or an average of 18.6 percent annually. Expenses in many categories do not vary extensively with increased production, being related more to actions of management and increases due to inflation. The exception, perhaps, is the maintenance operation, where extraordinary repairs may be required. That expense in 2012 was Rp 114 billion, or 45 percent of operational revenue from core services.

The combined effect resulted in a more than fourfold improvement in the operating profit during the five-year period, from Rp 20.6 billion to Rp 88.2 billion. The contribution margins for 2009 and 2013 were, respectively, 14.1 percent and 26.5 percent. The 2013 figure was the highest margin achieved during the period, slightly above the 26 percent achieved in 2010.

From the information available, it is difficult to determine the contribution of the Bengawan Solo basin to PJT I's financial results. Based on what is known, the operations for the other water resource services—for example, flood management and water conservation services—may be presumed not to be recovering costs. Notwithstanding, the overall profit picture for the company is fairly strong.

As indicated, PJT I provides other noncore services to strengthen its overall financial picture. With the exception of 2010 and 2013, it achieved good operating results for them, but profits fluctuated significantly over the five-year period.

The combined financial effect of PJT I's core and noncore services was an almost fourfold increase in profits before taxes, from Rp 21.8 billion in 2009 to Rp 85.0 billion in 2013. The net profit margin increased from 10.9 percent in 2009 to 18.0 percent in 2013. The five-year cumulative net profits totalled Rp 223.6 billion, or 75.6 percent of the 2013 equity balance of the company. Based on these results, the annexation of the Bengawan Solo river basin appears to have had little effect on the company's financial performance, both in terms of total revenue and net profit.

4.1.3 Financial Condition

Since PJT I operates primarily as a management service company, its financial statements are in line with this type of operation. The company does not own any water infrastructure assets within the service areas, as these are owned by government, which operates and maintains them.

PJT I is responsible for the operation and maintenance of selected public and commercial services, while a BBWS is responsible for the noncompany (non-commercial) assets in the river basin. PJT I is responsible for all maintenance for commercial services but may be also have responsibility for corrective and emergency maintenance based on its financial capacity. It may also be obligated for the construction of water-related infrastructure, although government support has an unspecified role.

A summary of PJT I's balance sheet data for the 2009–2013 is shown in table 4.3.

TABLE 4.3

Summary of PJT I financial condition, 2009–2013

(in million RP)	2009	2010	2011	2012	2013
Assets					
Current assets	52,713	134,363	177,197	212,778	269,519
Investments in BUMP	1,000	2,214	2,565	3,511	5,574
Property and equipment	50,795	52,073	61,366	78,742	78,078
Deferred tax assets	1,403	3,336	3,947	5,447	9,679
Assets not used in Ops	341	341	22	—	—
Other assets	2,812	2,043	1,513	103	444
Total Assets	109,065	194,370	246,611	300,582	363,293
Liabilities and equity					
Short-term liabilities	15,948	49,265	59,022	62,339	56,976
Liabilities other	490	2,834	3,888	4,825	7,991
BPYBDS	764	1,131	1,131	—	3,063
Total liabilities	17,202	53,230	64,041	67,164	64,857
Capital and reserves	74,272	89,753	139,132	181,963	233,418
Profit (loss) for the year	17,590	51,387	43,437	51,455	61,955
Equity	91,862	141,140	182,569	233,418	295,373
Liabilities and equity	109,064	194,370	246,610	300,582	363,293

Source: Annual Reports, PJT I.

The government is the official owner of all the major infrastructure assets, while the company's fixed assets primarily relate to its own buildings and the equipment and machinery it needs for carrying out its operations, maintenance, and other service functions. In cases where the company does invest in infrastructure, those values would be booked to its balance sheet and amortized accordingly. As of 2013, the company appears to have had Rp 10.9 billion in core infrastructure assets on its books, or approximately US\$900,000.

The company had no significant debt or other major financial obligations besides trade payables and other short-term liabilities. Property and equipment comprised roughly 21.5 percent of the total asset balance of 2013, while current assets comprised 74 percent.

Cash and cash equivalents comprised the bulk of PJT I's 2013 current assets balance. These accounts together totalled Rp 204 billion, or approximately 56.2 percent of total assets. The other main current asset categories were accounts receivables, other receivables, and accrued revenue. The combined accounts totalled Rp 64.6 billion, or 24 percent of the 2013 current asset balance. Accrued revenues, consisting of services performed that were rendered but not billed, averaged approximately 10 percent of operating revenue.

Accounts payable, tax liabilities, and other liabilities made up the bulk of the current liabilities account and totalled Rp 57 billion in 2013. The company had no long-term debt.

The capital position and cash balance for 2013 equated to a very healthy enterprise from a financial perspective. The equity of the company totalled Rp 295 billion, or 81 percent of total assets.

4.1.4 Financial and Operating Ratios

Table 4.4 presents the financial ratios published by PJT I for 2009–13.

Most of these indicate a very positive financial situation, particularly the profitability and liquidity ratios. To the extent PJT I is for the most part a management service company, however, several of the ratios do not reflect the operations well, particularly the asset turnover ratio, which measures the efficient use of assets employed. Moreover, the company is holding a significant balance in "cash and cash equivalent," which also tends to complicate the assessment of its financial operations. As a more appropriate turnover ratio would measure revenues against property and equipment only, this ratio was added to the presentation, along with the ratio of liquid assets to total capital to show where most of the capital is employed.

The fixed assets turnover ratio is also quite limited in this case because the water resources–related business of PJT I (flood management and water conservation services) is relatively stable and would not necessarily grow with more fixed assets being acquired. In the water business, acquiring additional fixed assets would not necessarily increase total revenue, but would reduce the asset turnover.

TABLE 4.4

PJT I operating and financial ratios, 2009–13

Profitability	2009	2010	2011	2012	2013
Operating ratio	85.6%	75.3%	78.9%	76.9%	75.2%
Net profit margin	10.9%	18.9%	16.3%	17.6%	18.0%
ROE	21.07%	55.22%	32.27%	28.41%	26.95%
ROI	24.59%	37.28%	26.55%	25.78%	25.32%
Liquidity					
Current ratio	303.25	272.74	300.22	341.32	473.04
Cash ratio	171.28	173.18	220.45	231.48	356.30
Activity					
Collection period (Receivable days)	27	34	33	44	31
Asset turnover ratio	138.54%	136.60%	110.26%	97.36%	95.44%
Capital to total assets	83.55%	73.04%	74.37%	77.66%	81.30%
Fixed asset turnover	298.5%	509.8%	434.9%	372.0%	439.8%
Liquid asset to capital	57.4%	95.2%	97.1%	91.2%	91.2%

Source: Authors.

These ratios may well reflect an accurate financial picture for the other lines of business, however, such as power generation. They would have some relevance but only if the financial information on these businesses is reported separately, with the businesses treated either as subsidiaries or profit centers rather than being consolidated into one operation. To some extent, the company has attempted this in its annual reports, but much more could be done to improve the financial presentation of the various business lines in the financial statements.

Equally, the cash and current ratio reflects a situation of excess liquidity, given the significant amounts of free cash being held in low-earning bank accounts. During 2009–13, PJT I's total capital position was largely (approximately 91 percent) made up of liquid assets. The company intends to get involved in power generation, and this may be the reason for such a high total balance of liquid funds.

PJT I has adopted a fairly elaborate benchmarking system, which rated the company at 95.25 out of 100 points in a recent assessment, placing it in the "healthy" category of AAA. Management scored 106.05 over six categories, with an overall rating of A1, or "good." While these scores may accurately reflect PJT I's performance in some respects, the company could perhaps do better on collections and on operational efficiency. The allowance for doubtful accounts more than doubled from 2012 to 2013, from Rp 8.6 billion to Rp 19.6 billion. The company does offset the receivables balance for doubtful accounts on the balance sheet, however, and its own aging analysis indicates it has provided for receivables that are past due by more than four months, which may be sufficient.

Tables 4.5, 4.6, and 4.7 present a variance analysis to explain the factors behind the company's operational

performance. For each of the core services, the analysis illustrates the causes for total revenue variance between 2011 and 2013.

The analysis for power services shows a positive revenue variance of Rp 42.6 billion between 2011 and 2013. This came largely from tariff increases averaging Rp 22.41/kWh, which contributed 65 percent of the total revenue increase, while the increase in production produced 30 percent.

The analysis of core water services to PDAMs and industry shows each of these services added around Rp 11 billion in revenue between 2011 and 2013, but for PDAMs most of the variance (81 percent) was attributable to tariff rather than production increases. For industry, the price impact was around 52 percent, while the remainder was related to production increases and the increase in quantity and price combined.

The combined average tariff increase for the two services of Rp 58.8/m³ is notable, but equally revealing are the percentage increases during the two years. For industry customers, the increase was 11.7 percent, and for PDAMs it was 31.1 percent, or an average of more than 15 percent. Industry customers in 2013 paid an average tariff of Rp 221/m³, or approximately US\$.019. The PDAMs' rate was a bit lower, at about US\$.01.

Tariff increases for the core services have been significant since the early days of operation. Since 1991 the power rate has increased approximately 2,490 percent by 2013, while water rates to PDAMs and industry have risen 700 percent and 1,257 percent, respectively.

On the cost side, the increases were not as significant from 2011 to 2013. Core operating expenses were up about 18.7 percent overall, or an average of 9.4 percent.

TABLE 4.5

PJT I variance analysis in core services, 2013 versus 2011

Water: Power—PLN					
	(Current Price – Prior Price)	=	(Variance × Prior Quantity)	=	Price Variance
PRICE	154.96 132.55		22.41 1,246.00		27,923
	(Current Quantity – Prior Quantity)	=	(Variance × Prior Price)	=	Production Variance
PRODUCTION	1,341.00 1,246.00		95.00 132.55		12,593
	(Current Quantity – Prior Quantity)	×	(Current Price – Prior Price)	=	Combined Variance
COMBINED	95.00		22.41		2,129
TOTAL	Current Revenue	–	Prior Revenue	=	Total Variance
	207,806		165,161		42,645

Source: Authors.

TABLE 4.6

PJT I variance analysis in core services, 2013 versus 2011

Water: PDAMs					
	(Current Price – Prior Price)	=	(Variance × Prior Quantity)	=	Price Variance
PRICE	111.98 85.42		26.56 360.30		9,569
	(Current Quantity – Prior Quantity)	=	(Variance × Prior Price)	=	Production Variance
PRODUCTION	380.01 360.30		19.71 85.42		1,684
	(Current Quantity – Prior Quantity)	×	(Current Price – Prior Price)	=	Combined Variance
COMBINED	19.71		26.56		523
TOTAL	Current Revenue	–	Prior Revenue	=	Total Variance
	42,553		30,777		11,776

Source: Authors.

TABLE 4.7

PJT I variance analysis in core services, 2013 versus 2011

Water: Industry					
	(Current Price – Prior Price)	=	(Variance × Prior Quantity)	=	Price Variance
PRICE	221.53 189.29		32.24 183.20		5,906
	(Current Quantity – Prior Quantity)	=	(Variance × Prior Price)	=	Production Variance
PRODUCTION	207.06 183.19		23.87 189.28		4,518
	(Current Quantity – Prior Quantity)	×	(Current Price – Prior Price)	=	Combined Variance
COMBINED	23.87		32.24		770
TOTAL	Current Revenue	–	Prior Revenue	=	Total Variance
	45,870		34,676		11,194

Source: Authors.

Total expenses were up by 16.9 percent over the two-year period, indicating noncore expenditures grew much more than noncore functions. For example, the O&M cost for water resources facilities and infrastructure grew 12.8 percent from 2011 to 2013, while overhead items increased by 19 percent.

PJT I's report does not specifically stipulate whether the company is formally required to make fixed investments

for carrying out its O&M responsibilities. The amount budgeted for investments in 2012, however, fell far short of actual investment expenditures. Total investments were Rp 41.7 billion, against a planned Rp 84.6 billion. More important, the original plan had called for the company to finance all these investments from internally generated funds, whereas in actuality approximately 33.5 percent were financed by the central government. The company

had planned to finance several hydro- and micro-power stations for Rp 34.1 billion, but for several reasons these were delayed.

4.2 THE PJT II ASSESSMENT

Section 4.2 presents a detailed list of PJT II water resources management responsibilities and arrangements, including for assets, tariffs, and operating agreements. Essentially, the company (i) supplies raw water to three hydropower units, including the Juanda installation, which it operates; (ii) supplies raw water for drinking water to twelve city and urban water utilities; (iii) supplies raw water to industry within its territory; (iv) supplies raw water to the Jatiluhur irrigation area; and (v) carries out river flushing and flood control. As indicated, PJT II is required to operate and maintain the water infrastructure, including in the Jatiluhur irrigation area.

PJT I and PJT II are quite similar in terms of their core business responsibilities, but their financial operations differ greatly in some respects:

- a. In addition to bulk water supply, PJT II is responsible for the maintenance of the irrigation network to the Jatiluhur irrigation area.
- b. Like PJT I, PJT II provides bulk water to water utilities and industry and to three hydropower installations, including its own. Since PLN has not been paying for the raw water for its own installation, however, the company receives no income from its power units. Moreover, it does not charge its own installation for bulk water.
- c. PJT II operates the Jatiluhur hydropower installation and generates electricity that is sold through the power grid. It also sells electricity separately to retail

customers and uses some of the production for its own consumption. The power generation business of PJT II thus constitutes the major portion (65 percent in 2013) of its total revenue. While difficult to assess fully from the financial data provided in the annual reports, it appears the company would not be financially viable without the added power sales. Revenue from water utilities and industrial customers totaled only Rp 138.7 billion in 2013, against total operating expenses of Rp 437.3 billion for the same year. Assuming a substantial portion of these costs could be linked to its power business, there is good reason to assume cost recovery would be difficult without the added revenue from water sales to the power units.

4.2.1 Power and Water Services

Table 4.8 presents details of PJT II's power and bulk water service for the period 2009–13.

Power generation from the Jatiluhur hydropower plant fluctuated widely within this period, with a low of 770 million KWh in 2011 and a high of 1.1 billion kWh in 2013. The variability in production was largely due to weather conditions, with highs during heavy rainfall years.

Raw water sales reflected a more constant pattern, with a slight growth from year to year from increases in consumption. Overall, bulk water production increased just 8.9 percent over the five-year period, with average annual growth of 2.2 percent.

The company also operates a water treatment plant and delivers clean drinking water to both industry and the population. Table 4.9 shows the clean water production of this treatment plant for the years 2011–13.

TABLE 4.8

2009–13 PJT II power generation and water services

	2009	2010	2011	2012	2013
Power generation (kWh million)					
PLN	802.88	1,008.14	531.24	522.50	846.52
Sold directly	116.31	149.53	192.93	197.73	208.94
Own use	42.959	50.76	46.16	54.31	58.19
	962.15	1,208.43	770.33	774.54	1,113.65
Raw water (m³ million)					
Power	—	—	—	—	—
PAM Jaya	450.65	471.53	462.48	466.6	452.81
PDAM City	72.68	78.27	89.76	104.16	106.97
Industry	177.94	179.86	195.54	218.12	221.67
PT Sang Hyan Seri	50.92	40.93	52.13	49.39	37.86
Total raw water	752.19	770.59	799.91	838.27	819.31

Source: PJT II Annual Reports.

TABLE 4.9
2011–13 PJT II clean water production services

PJT II—Clean Water Production—2011–2013 (in m ³ million)			
	2011	2012	2013
Industry	0.213	0.157	0.121
Population	0.360	0.521	0.607
Total Clean Water Production	0.573	0.678	0.728

Source: PJT II Annual Reports.

4.2.2 Revenue and Profit Results

Table 4.10 shows the company's operating highlights for the period 2008–13.

Just as for PJT I, operating results for the period were fairly solid, with revenues increasing from Rp 315.9 billion in 2009 to Rp 534.9 billion in 2013, or 69.3 percent. Operating expenses increased by 59.3 percent during the same period, with the largest expenditures on personnel, general administration, and maintenance. In 2009, the company followed a reporting format for expenses that did not

match the format used for the rest of the period. These three expense categories accounted for roughly 80 percent of the company's total operating expenses, however. In the "other expense" category, the company paid a charge of Rp 23 billion in 2013 for an incorrect tax amount.

Net profits after taxes over the period grew 87.7 percent, from Rp 41.4 billion to Rp 77.8 billion. As indicated earlier, PJT II relied substantially on its electricity business to produce these favorable financial results.

Table 4.11 provides a variance analysis of the two services over the three-year period from 2011 to 2013.

The analysis for power generation services shows how vulnerable the company is to losses in power sales. The total variance in power revenue from 2011 to 2013 came to Rp 136.8 billion. The increase in production from 2011 to 2013 realized Rp 93.6 billion in revenue variance, whereas price increases only realized Rp 29.8 billion. The combined variance resulted in a smaller gain of Rp 13.3 billion.

On the water side, the company benefited from increased tariffs more than from increases in production, as table 4.12 shows.

TABLE 4.10
PJT II summary of operating results 2009–13

(in million RP)	2009*	2010	2011	2012	2013
Revenue					
Power generation	209,660	272,592	210,011	239,352	346,841
Raw water	82,686	95,408	114,721	125,272	138,727
Tourism and recreation	6,867	7,169	8,168	8,411	9,534
Interest income		6,305	8,743	7,279	11,452
Other income	16,695	21,780	22,409	23,676	28,321
Total Revenue	315,908	403,254	364,051	403,990	534,875
Expenses					
Personnel	114,173	157,098	155,357	171,968	190,522
General and administration	50,680	62,297	68,893	71,578	81,238
Maintenance	24,470	57,637	64,630	48,112	77,040
Materials		13,290	13,398	13,766	17,321
Marketing and promotion		2,283	1,114	1,255	1,065
Travel		1,420	1,373	1,368	1,328
Depreciation	22,722	27,004	31,827	30,584	34,247
Other expenses	62,354	5,337	2,569	6,448	34,532
Total expenses	274,399	326,365	339,161	345,080	437,292
Profit before taxes	41,509	76,889	24,891	58,910	97,583
Income taxes	(53)	16,116	6,556	6,901	19,755
Profit after tax	41,457	60,772	18,335	52,009	77,828

*Followed a different report format for 2009.

Source: PJT II Annual Reports.

TABLE 4.11

PJT II variance analysis 2013 vs. 2011 in core services (power services)
(production quantities and revenues in millions kWhs and RPs, respectively)

	(Current Price – Prior Price)		=	(Variance × Prior Quantity)		=	Price Variance
PRICE	311.41	272.62		38.78	770.33		29,876
	(Current Quantity – Prior Quantity)		=	(Variance × Prior Price)		=	Production Variance
PRODUCTION	1,113.65	770.33		343.32	272.62		93,598
	(Current Quantity – Prior Quantity) ×			(Current Price – Prior Price)		=	Combined Variance
COMBINED	343.32			38.78			13,315
TOTAL	Current Revenue –			Prior Revenue		=	Total Variance
	346,800			210,011			136,789

Source: Authors.

TABLE 4.12

PJT II variance analysis 2013 vs. 2011 in core services (water services)

	(Current Price – Prior Price)		=	(Variance × Prior Quantity)		=	Price Variance
PRICE	169.32	143.42		25.90	799.91		20,721
	(Current Quantity – Prior Quantity)		=	(Variance × Prior Price)		=	Production Variance
PRODUCTION	819.31	799.91		19.40	143.42		2,782
	(Current Quantity – Prior Quantity) ×			(Current Price – Prior Price)		=	Combined Variance
COMBINED	19.40			25.90			503
TOTAL	Current Revenue –			Prior Revenue		=	Total Variance
	138,727			114,721			24,006

Source: Authors.

While the production variance between 2011 and 2013 resulted in an increase in revenue of only Rp 2.8 billion, price increases contributed Rp 20.7 billion, or 86 percent of the total revenue variance. The reduction of water purchases by the city water supply agency (Perusahaan Air Minum, or PAM Jaya) may also have been related to tariff increases, which were significant over the five years. As with PJT I, this may be difficult to sustain, even more so if costs continue to grow unchecked.

4.2.3 Financial Condition

Similar to PJT I, PJT II holds no major water infrastructure assets. As table 4.13 shows, the value of its property and equipment totaled Rp 272 billion in 2013, or approximately US\$22.8 million; and, like PJT I, the company's fixed assets consisted largely of its buildings and equipment. Current assets in 2013 totalled Rp 378 billion, or 55 percent of total assets, and consisted mostly of cash and other liquid assets.

The company's liabilities were mostly current liabilities and pension liabilities. They grew approximately threefold from 2009 to 2013 but still represented less than 23 percent of the total capital employed. Paid-up capital and reserves made up more than 75 percent of the equity and liability side of the balance sheet. Like PJT I, PJT II held substantial

sums of cash and other liquid assets in 2013, equating to approximately 56 percent of the total equity.

Staff bonuses increased substantially from 2012 to 2013 (174 percent for management and 274 percent for administration), and administration expenses increased 44 percent, leading to a total increase equivalent to about \$2.5 million in 2013.

4.2.4 Financial and Operating Ratios

Table 4.14 reflects the financial ratios published by PJT II for the period from 2009 to 2013. Again, a number of financial ratios were added to the ones presented by the company to better reflect the assessment.

Overall, PJT II showed good financial returns for the period, with healthy profit margins. Collections performance was also quite good, with the company apparently not having the same problems as PJT I. The overall financial position was quite good as well, with no debt and a large proportion of assets held as cash or other liquid assets. While the liquidity performance was more than adequate, better use could have been made of funds. As indicated, new investments in water assets would not likely have increased sales of water-related services.

TABLE 4.13

2009–13 PJT II summary of financial condition

(in million RP)	2009*	2010	2011	2012	2013
Assets					
Current assets	162,256	235,024	239,461	259,182	377,939
Equity in associated company	3,000	3,000	4,150	3,933	5,002
Property and equipment	208,031	230,003	230,933	263,624	272,456
Deferred tax assets	4,398	12,886	9,583	19,694	27,256
Other assets	9,020	8,006	13,881	18,067	3,813
Total Assets	386,707	488,919	498,008	564,499	686,466
Liabilities and Equity					
Short-term liabilities	44,131	84,334	70,124	70,108	106,007
Post-employment benefit liabilities	13,620	18,791	26,173	41,405	50,637
Total liabilities	57,751	103,126	96,297	111,513	156,644
Capital and reserves	287,499	325,020	383,376	400,977	451,993
Profit (loss) for the year	41,457	60,773	18,335	52,009	77,829
Equity	328,956	385,793	401,711	452,986	529,822
Liabilities and equity	386,707	488,919	498,008	564,499	686,466

*Followed a different reporting format for 2009.

Source: Authors.

TABLE 4.14

2009–13 PJT II operating and financial ratios

Profitability	2009*	2010	2011	2012	2013
Operating ratio	79.7%	74.2%	84.4%	77.8%	75.4%
Net profit margin	13.1%	15.1%	5.0%	12.9%	14.6%
ROE	12.6%	15.8%	4.6%	11.5%	14.7%
ROI	10.7%	12.4%	3.7%	9.2%	11.3%
Liquidity					
Current ratio	368	279	341	370	357
Cash ratio	207	193	245	262	281
Activity					
Collection period (Receivable days)	14.6	8.7	9.4	18.0	12.1
Asset turnover ratio	82%	82%	73%	72%	78%
Fixed asset turnover	152%	175%	158%	153%	196%
Capital to total assets	85.1%	78.9%	80.7%	80.2%	77.2%
Liquid assets to total capital	49.3%	60.9%	59.6%	57.2%	71.3%

*Followed a different reporting format for 2009.

Source: Authors.

With regard to operational efficiency, PJT II had issues similar to those of PJT I, as most of its financial results over the five-year period were derived from price increases rather than improvements in efficiency. With no revenue coming from its water power service, the company seemed viable only as a result of its power generation business. The tourism business was marginally viable and added very little to the company's overall results.

Given the large number of different aspects of the tourism unit, this side of the business would seem to have been more of a management distraction from PJT II's core business than a source of real added value. In 2013, net profits from the unit were Rp 506 million, or little more than one-half of 1 percent of total company profits. Additionally, PJT II seems to have diversified into providing many other business services, such as land and equipment rental. In

2013, it reported 13 other sources of revenue on its financial statements besides its major revenue generators.

4.3 PJT FINANCIAL ASSESSMENT SUMMARY

Based on data analysed through 2013, these two companies are operating quite profitably and are financially sound. PJT I seems to be experiencing some collection problems, but these are not significant against the full financial picture. PJT II is not receiving revenue for its primary water resources business, but it has more than compensated for this shortfall with the revenue it generates by selling power to PLN and other customers. No immediate danger of financial viability issues exists, as both companies are operating with more than adequate profit margins and are endowed with substantial cash balances and high net capital positions. These margins are, arguably, excessive, as the companies do not invest in major infrastructure, and as the government owns the assets and carries the asset replacement liability.

PJT II is currently reliant on power generation for financial survival, with a low contribution from core services to overall revenue, although this is expected to change once the system to supply more water to Jakarta is complete.

The resolution of bulk water services for power stations would add a significant amount to PJT II's profits, since corresponding costs are already included in current operations.

Both companies seem determined to expand to multiple business lines besides services related to bulk water management, and both are already providing a variety of noncore services including tourism services, laboratory services, equipment and land rentals, hospital services, drinking water sales, and aquaculture, among others. What is not clear, however, is whether these additional services are adding value to the core businesses.

Very little information is available on the costs of operating these other businesses. As indicated, the financial information presented by PJT II on its tourism business shows the financial benefits from this activity are marginal in the entire scheme of the company's operations. The other businesses cannot be fully evaluated given the current extent of financial reporting. The value added to both companies by other noncore business services, such as tourism and aquaculture, is difficult to assess.

Both PJT I and PJT II have relied on substantial tariff increases over the years for their financial results, but the scope for additional increases is uncertain and, if restricted, poses a significant risk to future business viability.

Drought is a serious threat to both companies, and both could benefit from more cost containment to slow the growth of operating expenses.

PJT I has been operating with exceptionally high profit margins from its public services, both against revenue and against invested capital. PJT II, on the other hand, has been making most of its profits from its power generation business and most likely is losing money from the public side. Its power generation business is receiving full tariffs without a corresponding need to pay down the value of the water and power infrastructure, which generates these revenues, as would be required by its independent power producer (IPP) competitors.

Moreover, whether, as both supplier and competitor to other IPPs within the basin, PJT II would benefit by not having to pay the water service charges charged to the other hydropower units, is unclear. For these reasons, potential areas for conflicts exist, and this may well be why the other hydropower stations are disputing the water charges. Adding more water revenue to PJT II's current revenue base would give the company extraordinary profits, perhaps well beyond what it needs to be a well-functioning enterprise.

4.3.1 Assessing Adequate Returns

So what is an adequate return in terms of the operations of these two companies? Many service management companies are paid on a contract basis, either with straight management fees or according to performance. The management fee should cover the appropriate operating expenses for these services, plus some compensation to the company. In addition, remuneration should be provided for the fixed assets employed, either as a return on capital or some margin on revenue. As noted above, however, the cases of PJTs I and II are more complex, in that they are operating multiple business lines, the profits of which would not necessarily be scrutinized. To ensure a credible performance assessment, greater transparency is needed in the reporting on the related water resources management operations.

For the core business, the companies should be provided a management fee which should cover fully the O&M-related expenses; in addition, they should earn a reasonable return on their assets and pay a suitable dividend to government for government-owned assets. The return on assets should, however, be narrowed down to those appropriately required for the operation of the public services. For PJTs I and II, these would most likely consist of the value of funds tied up in property and equipment and working capital, minus cash and cash equivalents. The appropriate rate would be set at the level of the opportunity cost of capital.

Determining an appropriate value for these fees would require determining benchmarks for the level of operating requirements and, hence, expenses. At the outset this would mean establishing operational requirements for the

public services, including a comprehensive asset management plan for the main water infrastructure that is under the responsibility of the operating companies. As a start, the current operational information could be used as an initial estimate of the base costs which, through ongoing monitoring, could be refined and improved upon. Incentives could be provided by giving the companies the opportunity to lower operational costs, with an upside profit if they do. The private businesses would be allowed to generate as much profit as the market bears, with the caveat that these services are competitively offered.

With regard to power generation, and assuming all water services are paid, the government could charge against part of this revenue in the form of a concession fee, the proceeds of which it would use to set up an investment fund for new water infrastructure. The point here is to level the playing field among the various hydropower operators and the PJTs.

The determination of adequate returns would become the basis for tariff adjustment policy and procedures.

CHAPTER 5

KEY ISSUES AND RECOMMENDATIONS FOR EXTENDING RIVER BASIN OPERATIONS IN INDONESIA

5.1 DISCUSSIONS ON THE CURRENT RIVER BASIN OPERATIONS APPROACH

This study has undertaken an assessment of the approach to river basin operations in the case study areas using a river basin governance framework. The key issues reviewed relating to this approach and the key functions of regulator, basin manager, and bulk water service provider are detailed below.

5.1.1 The River Basin Governance Approach

The water resource governance and administrative system for river basin operations would be improved by a more systematic and rigorous approach. While no one model for water resources governance is correct, certain characteristics are present to varying degrees in places where water resources are managed well:

- a. **A river basin approach:** The current approach for river basin operations in Indonesia is based on river basins or river territories. This is appropriate. Further consideration, however, is required of the appropriate sizing of management areas for B(B)WSs and PJTs. Also to be considered are the services best provided by provinces and districts, as well as responsibilities consistent with the national decentralization laws. In determining river basin management areas, consideration needs to be given to harmonizing river territory boundaries with administrative boundaries where possible, as this would significantly reduce the transaction costs resulting from the current MOU and KSO approach.
- b. **Separation of responsibilities:** Proper separation of responsibilities for river basin operations would result in organizations focused on particular services in which they are specialized and professional. In particular, separation of responsibilities would reduce the existing internal conflicts of interests within B(B)WSs and PJTs and lead to better decision making and economic efficiencies. Under the current arrangements, the following may be observed:
 - i. Although the core PJT responsibility for bulk water supply and river operations is clear, it has become confused by a seemingly primary focus on profit-making infrastructure as well as additional business

and revenue-raising activities, such as hydropower generation, tourism operations, and aquaculture. Where PJT has direct interests in and benefits from these businesses, its decisions on system operations might favor them at the expense of other water users. Arguably, the earning potential of these noncore responsibilities have come to outweigh the core responsibilities.

- ii. The DGWR advises the Minister of Public Works on the setting of water fees but is potentially conflicted in providing this advice because of its involvement on the PJT supervisory boards, as well as the role sharing between PJTs and B(B)WSs.
 - iii. B(B)WSs have conflicting responsibilities as both regulators (of water resource planning and water allocation) and service providers (of O&M for irrigation systems, reservoirs, and other river infrastructure).
 - iv. While PJT I is widely recognized as a professional and high-performing provider of bulk water services with fairly clear and nonconflicting responsibilities, B(B)WSs and PJT II have wide-ranging responsibilities and substantial internal conflicts (for example, with regard to water sharing and use for irrigation and hydropower generation).
 - v. In our meetings, both PJTs came across as generally more professional and possessing greater technical capacity than the B(B)WSs.
- c. **Increasing efficiency and competition:** Mechanisms to drive increased efficiency and reduce water fees are currently lacking. Introducing mechanisms for competition would increase pressure to improve efficiencies and lower tariffs. The range of options that could promote competitive behavior include the following:
- i. Performance benchmarking and comparative analysis of similar service providers, using key deliverables as key performance indicators (KPIs): KPIs could focus on asset management, financial performance, water services performance (such as water deliveries and timeliness, water use efficiency, and water quality), flood and drought mitigation, cost recovery, occupational health and safety, and so on. While immediately practical, this is a soft approach

that does not necessarily result in improved performance unless it is forcefully implemented by government. It does, however, raise the awareness and performance consciousness of service providers.

- ii. Tendering the operation of basin infrastructure for a set medium term among state-owned enterprises, such as PJTs: The services, service standards, asset condition and liabilities, asset management requirements, and tariff arrangements need to be defined before tendering, especially rigorously if, in the longer term, private sector or public-private partnership (PPP) operators are to be involved. The definitions of these parameters do not yet exist widely, and so an initial period of operation by a PJT would be required to define them first. The O&M financing of infrastructure that is not commercially viable would remain problematic without government support, either directly or in tariff setting. Under a competitive bidding approach, the DGWR could bundle various basins into a coverage area to ensure financial viability without the need for operational subsidies. The operating bids could also be implemented on a “least subsidy” basis, whereby a supplemental budget would be provided to address an operational deficit in the core functions.
- iii. Tendering the operation of individual infrastructure: While this option would be similar to the preceding one, it would result in different operators for infrastructure in the river basin, which is likely to lead to problems of coordination and inconsistently enforceable standards and, in particular, increase the risk of more severe flooding. Involvement of private sector operators would also necessitate an independent and transparent regulator, particularly if there are government-owned operators and political pressures not to allow tariff rises.
- iv. Assessing new coverage areas and the terms required to encourage efficiency and cost competitiveness in the tendering of service provision: The government currently has good benchmark data for bulk water tariffs that can be utilized for such an assessment.
- d. **Cost recovery:** Water service providers, both PJTs and B(B)WSs, have unfunded liabilities and commercially unviable infrastructure, such as flood levee systems. Issues include the following:
 - i. While PJTs are “for profit” and can collect revenue from water users, B(B)WSs cannot do the same for O&M of river infrastructure.
 - ii. Both B(B)WSs and PJT II are responsible for O&M of irrigation systems, for which revenue cannot be collected.
 - iii. As for-profit organizations, PJTs do not manage infrastructure considered commercially unviable. This leads to uncoordinated management of infrastructure in river basins, as well as loss of opportunities to generate revenue that could be used for O&M of the commercially unviable infrastructure.
 - iv. The PJTs’ management of only commercially viable infrastructure is likely to result in high profit margins, as more marginal, although still profitable, infrastructure is avoided; hence, potential sources of revenue are foregone.
 - v. Other options, such as not-for-profit, state-owned enterprises (for example, BLUs) that had been considered in the past by government as alternatives to the for-profit PJT, need further consideration.
- e. **Integrated management of infrastructure to better manage unprofitable service areas:** Management of central government-owned river infrastructure is undertaken by a number of different national organizations (PJTs, B(B)WSs, PLN) in the same river basin/territory. This is unlikely to be effective or efficient and increases the likelihood of greater impacts from water-based disasters. Having one lead river infrastructure operator in a river basin would be preferable and should result in a stronger body that is easier to regulate and hold accountable, clearly identifiable, and answerable to water users. It should also lead to better-coordinated operation of cascading infrastructure and adoption of uniform best practices throughout the basin. An alternative, although less efficient, approach would be to require PJTs to pay the government a concession fee from their financial revenue from profitable infrastructure, less an amount to compensate them for any past investments they had made. The government would then establish a fund for allocation to the managers of unprofitable infrastructure that requires subsidies.
- f. **Change management:** Changing the way in which river basin operations are managed may bring about substantial improvements in efficiency and effectiveness and benefits from risk reduction. Such change needs to be introduced incrementally over the medium to long term and should be carefully planned, with consideration of factors that might inhibit it. For example, is the government willing to support and drive change that in some cases might have political implications? How can the DGWR best develop a long-term strategic approach and vision, particularly where the senior officials have short tenures of only two to three years, on average?

5.1.2 The Regulator

A proper framework is not in place for regulating both public and private business lines of PJTs. For the most part,

economic regulation functions appear not to be exercised for either the public element of the business or the auxiliary commercial business services. In particular, some of the private business lines are sheltered by the exclusivity provided to the companies by their core business. As the PJTs operate as monopolies, their operations should be monitored and regulated more rigorously.

Both PJTs provide both private and public services under the umbrella of river basin operation. While this is not necessarily a problem, the core activities should remain the nonnegotiable focus of the operations, not the noncore commercial businesses, despite the earning potential of the latter. The exclusive service territory gives the companies certain competitive advantages that should be accompanied by more effective regulatory oversight in terms of service quality and cost recovery:

- a. **Regulation of bulk water providers:** While noncore business services should be allowed to earn what the market bears, core functions should be regulated more strictly in terms of allowable tariffs, cost containment, and operational and maintenance requirements, as well as investment obligations. To implement such a philosophy effectively, the government will need a much better determination of the standard costs associated with the O&M requirements in a given coverage area. This information does not appear to be available and will need to be developed with existing PJTs. Regulator arrangements would benefit from having a “statement of expectations,” with deliverables specified for the concerned operators, to enable effective management and auditing. Regulation would involve a national-level approach based on standards and the independent review and auditing of operators. Such an approach is especially important where service providers such as PJTs are “for profit.”

Currently, the MPW/DGWR/B(B)WS is the regulator for PJT operations. It is not independent in all regards, however. The DGWR, for example, is a member of the PJT supervisory board. Some conflict of interest is likely in this regulator arrangement for tariff setting and infrastructure O&M planning where there is a choice between O&M and government capital expenditure, and for water allocation where the B(B)WS is a beneficiary (for example, for irrigation). Changes in regulatory arrangements for the PJT services are therefore needed.

- b. **Tariff setting:** At present, the setting and approval of tariffs takes place largely in house within the DGWR and MPW. A more independent approach would benefit water users and government by reducing lobbying pressures and the possible over servicing and gold plating of infrastructure and by separating the tariff approver from beneficiaries.
- c. **Fair financial returns:** What constitutes a fair return for these companies is not clear. Current returns appear to

be excessive, and, hence, tariffs charged to end users are likely to be higher than necessary. Explicit guidance is needed on fair and justifiable returns.

- d. **Water allocations and entitlements:** Guidelines for water entitlements, permits, and an allocation approach are not yet approved. Once approved and in place, operating agreements should be used to regulate infrastructure operation. In the longer term, a properly functioning water entitlement and allocation system would enable a regulated water market approach leading to greater water productivity and increased economic returns and encourage local government and private investment in water management infrastructure.
- e. **Asset management:** Well-developed asset databases and management plans based on national standards are required for effective infrastructure O&M. These are also essential for tendering out services delivery. A satisfactory asset management plan is a first-level indicator that O&M activities are taking place, and it enables monitoring and benchmarking of river basin operators. There is little evidence that a strong asset management approach is being taken, by B(B)WSs or PJTs.
- f. **Consumer advocacy:** Beyond the National Consumer Agency Foundation, water users have only limited opportunity to lodge complaints so they are dealt with independently and transparently.
- g. **Regulation enforcement:** Laws, regulations, decrees, MOUs, and KSOs will only be effective where authorities are willing to enforce and apply the specified sanctions. Some reluctance to enforce these rules—such as in meeting asset management requirements—is apparent.
- h. **Performance monitoring:** Currently, service-based performance monitoring of river operators does not seem to be taking place.¹⁰ Among the reasons for establishing a performance monitoring and reporting regime are the following:
 - i. To inform customers about the level of service they are receiving and identify reasons for the level of performance
 - ii. To identify the baseline performance of individual businesses and provide incentives for improvement
 - iii. To provide information and data for developing regulatory standards (or targets) where required and for ongoing assessment of compliance with such standards

10. Pilot studies of benchmarking RBOs, including B(B)WSs and PJTs, have been undertaken using the NARBO approach (ADB TA 6351—RBO Benchmarking Program 2009). This approach was not service-based, however, and it lacked quantitative, standardized, and verifiable indicators; it was based on self-assessment, which is likely to give an optimistic view of performance, particularly if participants are not aware of best practice.

- iv. Where appropriate, to compare businesses by gauging relative performance within an industry (comparative competition) or by making comparisons with businesses performing comparable operations in other industries
- v. To inform the decision-making processes of regulatory agencies, water businesses, and government
- i. **Competitive assignment of service provision in new river basins:** The provision of a public service by a “for-profit” operator, whether a private or public corporation, should follow a consistent policy and regulatory framework. This was not done for the initial assignment of river basin operations, but the government should seriously consider adopting such a framework for expansion to new basins.

As indicated, the assignment of service provision in new basins could be approached on a competitive basis, initially involving government-owned enterprises, as this should result in better service and value for money. Operating and maintenance requirements should be set out very explicitly in the solicitation. The ensuing contract with government would cover the provisions of a typical PPP concession contract in the first instance for public corporations such as the PJT and in the longer term, if the government so decides, for private operators. The contract would cover issues such as contract duration, cost, tariff adjustments, requirements for O&M, and requirements for other specific public service functions. Bidders would bid on the basis of least cost to government or a concession fee paid to the government that would be in excess of the estimated profits to be generated by the company.

With only two companies in place currently, the competition for basin service provision is very limited. The government could consider opening up these tenders, following a well-regulated process, to private operators and could also arrange for new public corporations to enter the sector.

5.1.3 The River Basin Manager

The B(B)WSs are mandated to act as national river basin managers. Their performance in river basin management appears far from optimal, however. A number of measures are needed to improve the situation, including approval of basin plans and water allocations and clear division of responsibility and resource sharing between the BBWSs and provincial dinas concerned, as well as their effective enforcement.

- a. **External perspectives of B(B)WS performance as a river basin manager:** The B(B)WSs are widely criticized, including within the DGWR, for not carrying out their water resource management roles, particularly their

river O&M responsibilities, and for focusing instead on projects and construction. This study was unable, however, to locate any technical studies of performance to confirm or determine the extent of this possible problem.

- b. **River basin plans and water allocations:** Development and approval of river basin plans and associated water entitlements and allocations are urgently required to enable proper regulation and operation by bulk water providers.
- c. **Streamlining the memoranda of understanding (MOUs) and operating agreements (KSOs):** B(B)WSs use complex systems of MOUs and KSOs with other service providers, especially at the provincial level, and with PJTs in the basins where the latter operate. Better definition and separation of responsibilities would reduce the high transactional costs associated with such arrangements and enable increased resourcing of O&M activities. The government's willingness to enforce KSOs is necessary to ensure good quality services are provided. Lack of enforcement will result in a gradual diminution of service provision and quality.

5.1.4 The Bulk Water Service Provider

Bulk water service provision, including river infrastructure O&M in national basins, is often shared among several organizations—for example, B(B)WSs, PJTs, and provincial dinas. This has led to a lack of clarity in accountability for the bulk water services and to river asset management and maintenance being ignored for unprofitable infrastructure. Separation of profitable and unprofitable infrastructure O&M between PJTs and B(B)WSs, lack of clear infrastructure maintenance requirements and plans, and inadequate budget allocations for unprofitable infrastructure mostly managed by BBWSs and provincial dinas, as well as inadequate water user participation, are some of the important contributing factors.

- a. **Coordination of river infrastructure operation:** Responsibilities at the national level for river infrastructure O&M in a significant number of basins is shared among several separate organizations, including PJTs, B(B)WSs, and PLN. Provincial dinas have responsibilities as well. This complicated approach to management requires coordination of infrastructure operations, such as water sharing, timing of releases, and flood control. Harmonized infrastructure operation is especially important during floods and droughts, and a coordination mechanism is not likely to be sufficiently responsive to minimize impacts. Assigning all river infrastructure O&M function to one lead organization would be more efficient and effective. A PJT approach seems preferable because of the PJTs' ability to collect revenue and provide higher-quality services.

- b. **PJT I responsibilities:** PJT I has a large geographical area of responsibility with a profitability focus. This means that rather than providing services for all river infrastructure for which it is legally responsible, the company “cherry picks” the most profitable infrastructure to manage, leaving the less profitable or unprofitable to B(B)WSs. It also means profits from “profitable” infrastructure cannot be used for O&M of “unprofitable” infrastructure.
- c. **Hydropower operation:** PJTs operate hydropower plants at some reservoirs, which is likely to result in conflicts in decision making with regard to providing water for bulk water supply, operating reservoirs for flood control, and providing water for the company's own revenue generation purposes. The conflict could be reduced by separating roles—for example, by making the PJTs the bulk water providers and having PLN business units operate hydropower generation, where each has the advantage of sectoral specialization. It might also be possible to tender the right to generate hydropower among PLN business units. The hydropower generator would pay a fee to the PJT based on the power generated.
- d. **Ring-fencing the core business areas:** Improvements in the performance assessment will require the companies to ring-fence their core business activities from their noncore commercial services. Ideally, the companies should be separated into subsidiaries with entirely separate financial reporting for core and noncore services. They would not necessarily have to develop separate financial statements for each major private business line, but the assets, revenues, and expenses for the core business should be clearly separated from the rest of the operations. The core businesses should have separate financial statements that would then be consolidated at company level. This would provide more transparency to the various financial operations and improve the assessment of performance for the core business activities. Better financial information would also be needed in the event core operations cannot recover all the related costs, as appears to be the case with PJT II.
- e. **Consistency in financial reporting between the two companies:** Better financial oversight enables the regulator to benchmark accurately the companies' performance vis-à-vis one another. This would be greatly facilitated by the companies' adopting the same reporting formats for their primary and subsidiary financial statements. Currently, the reporting formats are different, making an accurate comparative analysis difficult. For example, PJT I more correctly breaks down operating revenue and expenses between core and noncore business, while PJT II's financial reports neither show this breakdown nor provide a correct breakdown

of operating versus non-operating expenses. Included in PJT II's operating expenses are such items as depreciation and general administrative and selling expenses which, technically, should not be defined that way.

Moreover, expenses should be further broken down between direct operating expenses and overhead items, such as general and administrative expenses, office expenses, and selling and promotional expenses. Employee expenses should be broken down in the same fashion to better reflect the direct operations and general costs. The accurate categorization of costs, revenues, assets, and so forth affect the ratio analysis. Because each company uses different definitions for operating costs and revenues, their operation ratios are not comparable.

Standardization of reporting should also be applied to B(B)WS business units performing river operations similar to those of the PJTs so the DGWR can better understand the services being conducted by the B(B)WSs and assess the potential for transferring these responsibilities to the PJTs.

- f. **Focus on performance reporting:** Currently, the companies focus their performance measurement on “actual” versus “planned” estimates. While this may be satisfactory in some cases, it's often a quite static approach for measuring real performance. A better approach is through “flexible” budgeting or “performance” budgeting, as illustrated in part by the variance analyses presented in section 4, above.

The performance budget approach allows dependent variables, such as operating costs and revenues, to change with the independent operations variables, such as prices and production units. This approach better reflects the reasons for differences in total profits and highlights more specifically whether such changes are due to performance problems or just, for example, to changes in production. As illustrated, most of the profits generated by PJT I in 2009–13 came from tariff increases rather than efficiencies in the operations. Efficiencies should essentially be the focus of analysis, rather than relying on a static analysis of planned versus actual. An analysis of efficiencies can help explain end results among the different operating revenues and cost categories; for example, it can determine if labor cost increases are due to a Consumer Price Index increase or an increase in staffing or pension liabilities. The analysis results can then be compared to unit production volumes to assess if staffing levels are in line with actual output.

- g. **Development and adherence to a well-defined maintenance plan:** The PJTs are required to provide preventive and corrective maintenance to the various water and river infrastructure units within their service territories. It

is not clear, however, whether they are carrying out their maintenance functions according to a well-defined plan that is monitored and reviewed regularly by the owner and the regulator. Such a plan should provide specific time intervals and work program requirements for carrying out these maintenance functions annually.

In practice, the plan could initially be established with the expansion to new river basins through negotiations with the government's regulator. The important point is that these companies should have very well-defined service obligations that have been itemized in terms of costs and can be monitored closely for compliance. Under a typical bidding approach, operators would bid their management fees for carrying out the functions, the maintenance plan for which would serve as the basis for the main service obligations. Such a maintenance plan should also itemize the amount of dredging required for reservoirs each year based on reliable estimates. The companies can always submit revised estimates if they feel the requirements are too stringent or they are not sufficiently compensated.

- h. **Conflicts of interest in servicing and competing with independent power producer (IPP):** The need to resolve the current conflict between PJT II and PLN over the payment of the water service fees is obvious. At the heart of this dispute lies the fact that PJT II is selling power like PLN and probably not paying the required water service fee. This gives PJT II a competitive cost advantage, since it is not paying the cost of the infrastructure.

While the sale of power by the PJTs may not necessarily be a problem in the full scope of operations, the transaction between the water management service function and power generation function should be handled independently and on an arm's-length basis. A power utility would, however, presumably be better suited for and more efficient in providing the hydropower generation services in response to consumer demand.

If the PJT does decide to involve itself seriously in power generation, it should set up a fully owned power generation subsidiary and charge it fully for the water services. Based on estimates using the price charged by PJT I to its hydropower units, PJT II could raise as much as Rp 176 billion by charging its power unit for bulk water. This would mean the core business of PJT II would likely become financially viable through an effective separation of business activities. Furthermore, if the companies are not required to amortize the value of the power infrastructure, they should pay a concession fee to the government.

- i. **Water user participation:** Using mechanisms such as "water service committees," water service providers should formally involve their clients in discussing the

service levels and in developing water tariff proposals before submitting them for approval. No such mechanism seems to be in place as yet for PJTs and B(B)WSs.

5.2 A ROADMAP FOR STRENGTHENING RIVER BASIN OPERATIONS

5.2.1 Moving toward an Integrated River Basin Operations Model

The principal recommendation from this study is to strengthen the institutional arrangements for and approach to river basin operations and the delivery of bulk water to customers, with the operation and management of river infrastructure eventually becoming the sole responsibility of an efficient business entity, such as a PJT. The suggested approach centers on a clearer and more harmonized separation of responsibilities, especially between the B(B)WS and the PJT, along with much improved service regulation, including enforcement.

This approach would involve the following institutional arrangements:

- a. **Apex multi-stakeholder platform:** The National Water Council should continue to serve as the platform for bringing together government and nongovernment stakeholders to participate in and advise on integrated water resources and basin planning and on management and implementation. Generally speaking, the performance of councils, including basin councils, seems in need of strengthening, as revealed during stakeholder consultations. For this reason, separating the executive (decision-making) responsibilities of the councils involving government leaders from the advisory function of the wider stakeholder community may be beneficial and should be considered. The result would be the establishment of a decision-making council involving governments at different levels and a separate community advisory committee that advises the council on important issues, policies, and community perspectives.
- b. **Directorate-General for Water Resources:** The DGWR would continue to be responsible for national-level policy, programming, regulation, and performance monitoring of river operations. Establishment of a more independent regulator should be considered, particularly with relation to tariff setting. Currently, the DGWR sits on the board of the PJTs, which means its capacity to supervise and regulate them independently may be compromised. Furthermore, the role of the DGWR in advising government on government investment might result in a conflict of interest with its involvement in the PJT board, as well as with the interests of the B(B)WSs.

In addition, the current DGWR structure appears not fully compatible with an integrated approach to water resources management and its role in regulating

organizations, such as PJTs. It needs much stronger field base operations and better definition and separation of roles and responsibilities between the B(B)WSs and the PJTs, as well as the establishment of a national regulator to properly regulate the public good aspects of the PJT business.

In the future, the DGWR may need to restructure itself to better fulfill the three key functions of water resources management, asset management, and regulation. It could have a number of local directorates to manage the B(B)WSs and regional service delivery. Technical units for technical advisory and guidance functions and for national water resources policy and planning would also need to be included. Ideally, the regulator would be a government agency independent of the sector agencies it regulates. If this is not possible in the short term, it could be placed under the MPW in an arrangement similar to that of the DGWR's Dam Safety Unit for dam management regulation. The DGWR would continue to serve as the secretariat of the National Water Resources Council.

Figure 5.1 presents a possible option for strengthening the overall DGWR organization and river basin operational services, which would include these salient features:

- i. An independent regulatory office in charge of safety, water allocation, water quality, and economic regulation: The office would strengthen the tariff-setting mechanism, monitor adherence to service

standards and compliance with asset management requirements, set requirements for financial reporting, and monitor consumer satisfaction.

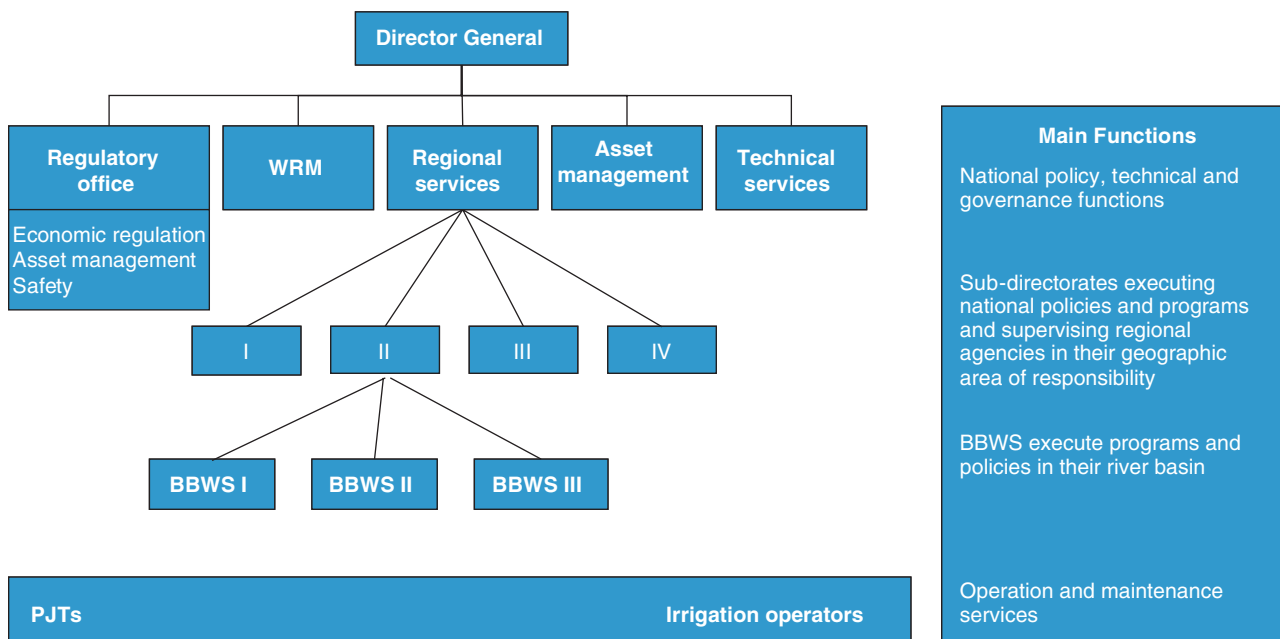
- ii. Non-executing units at the headquarters office to carry out technical and planning functions in support of executing units: The Asset Management Directorate would provide clear asset management guidelines and requirements for PJTs and the river operations units of B(B)WSs. The directorate would closely monitor and supervise implementation.
- iii. A Regional Services Directorate comprising a central unit or secretariat and the leaders of the B(B)WSs: This unit would include sub-directorates that monitor activities by B(B)WSs and PJTs in a limited number of regions (say, eight to twelve) covering the whole territory of Indonesia. It would provide a forum for B(B)WSs to discuss needs and approaches for strengthening PJT and B(B)WS performance. The B(B)WSs would be responsible for water resources management as well as contract supervision, operating within their jurisdictions.

These streamlined arrangements involve some restructuring of the current approach and need to be piloted and implemented progressively. The following roadmap is recommended for implementing the changes:

- a. **Future roles of B(B)WSs:** The B(B)WSs would continue to be responsible for river basin governance, including planning, policy, and government investment in water

FIGURE 5.1

A Possible Future DGWR Structure



resources development and conservation, though not for river infrastructure O&M. They would, on behalf of the DGWR, contract with PJTs and supervise them in providing services according to specific operating agreements and service contracts in national river basins and territories. In the shorter term, B(B)WSs should be divided into two independent internal business units, one a water resources manager entity governed by the multi-stakeholder basin water resources council and the other a bulk water service provider entity. In the medium term, the bulk water provider business unit would be transferred to a PJT or become a new PJT, possibly in combination with similar B(B)WS business units, for river infrastructure O&M and bulk water services, subject to market competition. To compete for new infrastructure development and rehabilitation work, B(B)WSs could also set up independent construction entities where appropriate. Setting up separate internal B(B)WS business units in the short term would enable better understanding and reporting of the B(B)WS river operation business, as well as facilitate transfer to the PJT in due course. B(B)WS river operations business units should be required to comply with the same reporting requirements as PJTs for financial reporting in general and asset management reporting in particular.

- b. **PJT development:** The PJTs would be responsible for O&M of all national-level river infrastructure, profitable and unprofitable, according to operating agreements and service contracts. The infrastructure O&M and bulk water services constitute the PJTs' "core businesses" and would collect revenue from the retail water service providers. These services would include bulk water supply for irrigation system operators that could not collect service charges. For bulk water supply to irrigation, the government would be expected to make up the shortfall in revenue. Preferably, PJTs would no longer be directly responsible for "noncore businesses," such as irrigation, hydropower generation, tourism, and aquaculture. The existing noncore businesses would be transferred to the relevant government authority or tendered out (for example, the operation of tourism facilities), and the PJTs would collect a royalty payment from the sector or private operator. Until these arrangements are in place, an internal business unit or units would be established within PJTs so core and noncore activities are separate, with separate financial reporting and explicit payment for services between businesses.

In the future, the following changes may be warranted for the healthy development of PJTs:

- i. The PJT model should be replicated with improvements, including formal contractual arrangements with clear definition of core businesses; introduction of service and performance standards, based on an agreed-upon asset management and O&M

plan and service criteria; separation of core and noncore business; adoption of integrated river infrastructure management to avoid cherry-picking; improved governance structure involving customer groups; and the introduction of formal regulatory arrangements for economic and performance regulation.

- ii. To ensure the financial sustainability of PJTs that take on basins with low revenue potential, the government should design a mechanism to channel budget or subsidy to them for fulfilling the O&M of unprofitable infrastructure.
 - iii. Many more PJTs or equivalent entities should be created to get the best-value services out of competition.
- c. **Regionalization of river basin operations:** In the short to medium terms, competition would be provided by performance benchmarking of separate PJTs and their regional subsidiaries. At the same time, B(B)WS river operations units should be required to undertake the same performance benchmarking for their business. Ultimately, the river operational services would be provided competitively. Service provision would be tendered out, most likely among a number of separate PJTs, which would be progressively created as the PJT approach is established nationally after an initial period of establishing PJT I or PJT II regional subsidiaries. To provide a more accountable local service and competitive environment, a significant number of regionally located PJTs (for instance, eight to twelve separate PJTs), based on river territory boundaries, would be established.

5.2.2 Policy Considerations for Future River Basin Operational Services

In strengthening the approach to river basin operations, the government needs to take into account the range of policy considerations already discussed above, particularly in section 5.1. The following are the considerations judged most immediate by the study team:

Strengthen the regulatory approach. The regulatory approach and its performance is a key weakness of the current river basin operations approach. It has resulted in limited river infrastructure O&M and asset management, uncertainty in water allocations, little or no enforcement of operating agreements, and a lack of transparency and independence in tariff setting. To address these issues, the regulatory approach should be strengthened by establishing more independent and transparent processes through clear separation of the functions of the regulator, the river basin manager, and the river operator (bulk water supplier). Greater priority and urgency should be given to establishing the requirements for asset management and

O&M in particular, and to the monitoring and enforcement of operating agreements and licenses.

Regulate the core functions. Economic regulatory functions are not exercised for either the public side of the business or the auxiliary commercial business services of the PJTs. In particular, some of the private business lines are sheltered by the exclusivity provided to the companies for their core business. Insofar as the public side is concerned, the companies operate as monopolies. For these reasons alone, their operations should be monitored and regulated more closely.

While noncore business services should be allowed to earn what the market bears, the core functions should be regulated more strictly in terms of allowable tariffs, cost containment, asset management, and operation and maintenance requirements, as well as investment obligations. To implement such a philosophy effectively, however, the government needs a much better determination of the standard costs associated with the O&M requirements in a given coverage area. These do not appear to be available. For existing coverage areas, the DGWR should require both PJTs to put together well-developed asset management or maintenance plans, using a standard format that would spell out all routine and major maintenance requirements broken down into a long-term schedule (for example, 20–30 years), with budgeted costs for each main infrastructure unit within each basin. Such a maintenance plan would then be strictly monitored for compliance by the DGWR and its designated B(B)WSs and would be a main component of proposal reviews for tariff increases.

Move toward competitive bidding for new service areas. For new service areas, the DGWR should move toward a competitive approach, whereby PJTs (existing and newly developed) would compete on a lowest cost basis for the core functions associated with O&M requirements for the given service coverage areas. This means a request for bids (or proposals) would include a similar maintenance plan as reference. Development of and adherence to a well-defined asset management plan that specifies the service obligations of the company under its core functions should be required. A satisfactory asset management plan, formulated according to specific guidelines, and its implementation would be a key performance indicator to be monitored by the regulator. As an interim measure, monitoring of key river operational performance indicators, such as asset management, water deliveries to entitlement holders, revenue, financing, and so on, should be put into place for the river operations units of the PJTs and B(B)WSs.

Use competition to strengthen operational efficiency and balance profitable versus unprofitable coverage areas. Under a competitive bidding approach, the DGWR could still bundle various basins into coverage areas to

ensure financial viability without the need for operational subsidies. Operating bids could also be implemented on a “least subsidy” basis, however, whereby a supplemental budget could be provided to shore up an operational deficit in the core functions.

Alternatively, the government should also consider establishment of a fund into which PJTs may pay a concession fee from profits, which the government would then allocate to nonprofitable river basins. Given recent experience, the government seems to have good benchmark data for bulk water tariffs that can be utilized to assess new coverage areas. Under an approach where concession fees are paid on profitable coverage areas, the government could establish a fund to offset the O&M cost of other basins that would require subsidies.

The prospects for expansion of the PJT model appear promising. For example, discussion with its BBWS revealed potential revenue of the Serang-Luci basin could support not only operation and maintenance in the basin, but also O&M of the neighbouring basins deemed unprofitable on their own, and perhaps enable payment of some concession fee to the government.

The government might also consider opening up these tenders to new or other public corporations to enter the sector for competition. In due course, private operators could be considered for involvement. With only two companies currently in place, the spirit of a competitive bid is effectively limited.

Adopt an “overall river basin approach” for all river infrastructure O&M. The government should look to improve river infrastructure O&M significantly by taking an “overall river basin approach” rather than dealing with individual structures based on their profitability. This would mean integrated management of all central government river infrastructure within a basin by a PJT—an approach that would largely eliminate the current overlaps in functions, responsibilities, and activities among the PJTs, B(B)WSs, dinas, and PLN business units. Elimination or significant reduction of these overlaps would improve management effectiveness, reduce conflicts of interest to ensure clear accountabilities, increase efficiency, and reduce risks of slow or uncoordinated operations during floods and droughts.

The overall river basin approach would apply a framework within which the roles of resources manager, bulk water supply operator, and retail water supply operator are clearly separated, for example, a BWS or BBWS would be the basin manager; the PJT would be in charge of infrastructure (bulk water supply); and irrigation agencies and urban water utilities would control retail water. Alternatively, where the decision is to have a “vertically integrated” business, separate internal business units would be established and would report independently.

Strengthen the adjustment policy and process for tariff setting. In line with the points above favouring stricter regulation, the formula for tariff setting and adjustments should be strengthened, and, as part of this formula, the government should decide whether PJTs should be responsible for investments in key infrastructure assets. While some indications are that the PJTs have investment responsibilities, specific and verifiable targets have not been developed. Investment responsibilities should be part of their service obligations, as is standard practice globally in normal concession agreements. In such cases, the PJTs would be allowed to earn a return on appropriately invested capital, which could also be part of the tariff adjustment protocol.

Improve asset management. The concept of asset management appears inadequately understood in the sector, and scope for improvement is ample. Very little information was available to assess this function for the PJTs and B(B)WSs. The river infrastructure O&M was found to be generally weak, for most B(B)WSs and provincial water departments (Balai Pengelolaan Sumber Daya Air, or BPSDAs) and PJT II. Lack of technical skills was also identified as an issue. As already mentioned, face-to-face interviews indicated the PJTs often do not perform O&M properly for nonrevenue-generating infrastructure for which they are responsible, such as maintenance of flood canals. It is generally believed that the PJTs only focus on maintenance of revenue-generating infrastructure.

In light of the above, the DGWR as the regulator needs to supervise infrastructure O&M performance much more closely by providing more clearer direction on budget allocation and use to B(B)WSs and by setting asset management standards covering asset management plans, performance monitoring, and linking of tariff setting to compliance with these requirements and standards.

Ring-fence the core functions. The government should require PJTs to ring-fence their core business activities from their noncore commercial services so company performance is transparent and can be assessed, especially for core businesses. Better financial information should also be provided in the event core operations cannot recover all related costs, as is the case with PJT II.

Practically, this would mean separating the PJTs into subsidiaries, with entirely separate financial statements for core and noncore services. The companies would not need to develop a separate financial statement for each major private business line, but the assets, revenues, and expenses for the core business should be clearly separated from the rest of the operations. The separate financial statements of the core businesses would be consolidated at the company level. Similar arrangements should be required of B(B)WSs to improve the performance of their core business activities.

Prevent conflicts of interest in servicing and competing with independent power producers (IPPs). The current conflict between PJT II and PLN over the payment of water service fees needs to be resolved. Any other conflicts that may arise from the expansion of PJTs into noncore service areas, leading to direct competition with their core business of bulk water services to the entitled customers, should also be averted.

While the selling of power by the PJTs will not necessarily be a problem in the full scope of operations, the transaction between the core business side and the power generation side should be handled on an “arm’s-length” basis. This would require setting up a fully owned power generation subsidiary of the PJTs and charging fully for the bulk water services provided by the core business to the subsidiary company. Based on estimates using the price charged by PJT I to its hydropower units, PJT II could generate as much as Rp 176 billion by charging its power unit for bulk water. This would mean the core business would likely be financially viable through an effective separation. Furthermore, if the companies are not required to amortize the asset value of the power infrastructure, they should pay a concession fee to the government.

Ensure consistency in financial reporting. The government needs to standardize the reporting requirements for PJTs. At present, the financial reporting formats are quite different, which makes it difficult to benchmark the companies’ performance accurately vis-à-vis one another. Furthermore, categorization of costs, revenues, assets, and so on affects the ratio analysis, and the use of different definitions for operating costs and revenues renders the ratios incomparable. The companies should adopt the same reporting formats for their primary and subsidiary financial statements, breaking expenses down between direct operating expenses and overhead items, such as general and administrative, office, selling, and promotional expenses. Employee expenses should be broken down in the same fashion to better reflect the costs of direct operations versus general expenses. Finally, this standardization should be applied to B(B)WSs as well so the scope for transferring their responsibilities to PJTs can be assessed.

Focus on performance monitoring and reporting. The PJTs and B(B)WSs seem to be doing little performance monitoring and reporting. To improve this situation, the government needs to require river basin operators to report consistently against performance indicators and targets, including those having to do with water deliveries, asset management, financial performance, customer satisfaction, and so on. Currently, the PJTs focus their financial performance measurement on “actual” versus “planned” estimates, which is a static approach for measuring real performance. A better approach is through “flexible” or “performance” budgeting, so the reasons for differences in total profits are clear—for instance, whether such

changes are due to performance problems or just changes in production.

Roll out the PJT approach nationally. The government should consider how to increase the number of qualified new entrants into river infrastructure management, as two PJTs will not suffice to create a competitive environment in the sector. Given the number of river basins in the country, some eight to twelve independent PJTs would be required for full national coverage and to promote competition and benchmarking of PJT performance. The national roll-out of the PJT approach would need to be planned systematically to avoid the current situation of having different PJT models, leading to difficulties in governance and inconsistent policy and management practices. The first step would be deciding on the most suitable PJT model (the PJT I approach appears to be working better than the PJT II) and then taking on expansion areas, either by allowing private companies to enter the sector or by requiring the existing PJTs to spin off separate legal entities from their current operations. At a minimum, the PJT I expansion proposal should be implemented by a fully owned subsidiary of a PJT, which, in the longer term and after standard practices are well established, could be spun off as an entirely independent service provider company.

5.2.3 Recommended Steps for Strengthening River Basin Operations

As discussed above, PJTs and II are extending their operations into new river basins. At the moment, no systematic plan or assessment methodology exists for extending the approach more widely. Current assessments for expansion of the PJT areas focus on individual infrastructure and its “profitability” rather than on whole basins, including looking at rationalizing the roles of the B(B)WS and PLN business units for satisfactory infrastructure management and meeting overall financing needs.

Recognizing the many information gaps encountered during this study, further studies and appropriate arrangements are needed to enable a smooth and minimally risky transition from the current mixed B(B)WS–PJT model to the recommended, more streamlined and accountable regionalized PJT approach.

Changes will take time, and a step by step approach, including pilot, is advisable. Any changes need to be planned and investigated in detail, particularly because of the assessments this study was unable to cover. Development of the overall change approach would best be overseen by an interagency task group. The range of studies and implementation steps recommended would include the following.

Making Arrangements to Strengthen the Current Approach and Prepare for Transition

To strengthen the current approach and minimize the risks from a transition to the new model, preparatory studies are needed. This preparatory stage would involve two steps:

- a. **Setting up separate river operation business units in PJTs:** For both PJTs, separate internal river operations business units will be established and reporting made on current services; O&M, asset condition and management approaches; budgets and (human) resourcing; financial performance including tariff systems and approaches to infrastructure depreciation and renewals; financial transparency of noncore activities; distribution of profits; the potential to increase royalty payments and tariffs; and, any preferential tariff treatment to internal business activities. This will enable the better understanding of the PJT river operations business. For B(B)WSs operating in the same basins, similar arrangements should also be considered.
- b. **Conducting a systematic national assessment of river basins and planning for the progressive extension of management by PJT I and II:** To date studies of the potential of extending the PJT approach to other river basins have been limited and would benefit from being more thorough and systematic and including assessment of relevant B(B)WS activities. It would identify attractive river basins/territories for extension of PJT approach as well as plan for extending the approach progressively.

Detailing the Proposed Strengthened River Basin Operations Model

This report presented an improved approach (model) with a stronger and more independent regulator and separation of the river basin manager from the bulk water operator, which in turn would be separated from the retail water users, such as those needing water for irrigation, hydro-power, and urban water supply.

Variations of the proposed model are possible, for example, in terms of vertical integration and internal business unit separation. Any such variation should be developed to suit the Indonesian conditions, so the approach is “viability and risk tested” and clearly understood. Activities could include the following:

- a. **Evaluating successful approaches to regulating and providing river basin services:** Successful approaches from elsewhere would be evaluated and lessons drawn for developing an approach which suits Indonesian conditions.

- b. **Evaluating a transfer of responsibilities from B(B) WSs to PJTs:** In the PJT I and PJT II areas, following on from step (a), the benefits and implications of transferring infrastructure O&M responsibility from the B(B) WS to the PJTs so the latter manage all infrastructure in river basins would be assessed and transitional arrangements identified. A final decision would be made as to whether the PJT approach or another (for example, BLU) is more appropriate for the Indonesian situation.
- c. **Specifying the core and noncore aspects of river operations:** The extent of and best approach to the management of noncore aspects of river operations in PJTs would be evaluated, including how this is done elsewhere.
- d. **Establishing regulatory arrangements and procedures for the core responsibilities of river operations service providers:** The practice of independent regulation of tariff setting, asset management, water supply (allocations, service standards, water quality), flood and drought management, environmental protection, investment requirements and financial reporting, performance monitoring, and enforcement would be evaluated and established with strengthened institutional arrangements and procedures.

Piloting the Proposed Model of Strengthened River Operations

The new model of regulation and river infrastructure operations, with the PJT responsible for all basin infrastructure and noncore business activities outsourced, should be piloted and adapted before it is applied more widely. A river basin such as Bengawan Solo, which has several different infrastructure managers and reasonably well-developed conditions and working arrangements, could be used as a pilot basin. The current extension areas

would be integrated into this piloting study. Important good practices—such as performance benchmarking and monitoring, assessing revenue needs, rational water tariff setting, financial reporting following national regulations, and requirements of the regulator—should be included in the pilot.

Regionalizing and Competitively Providing River Operations

The improved PJT approach would be progressively extended to all regions by addressing the lessons from the pilot studies. Performance monitoring of river operation services for the separate river basins managed by PJTs could be implemented immediately and extended as other PJT subsidiaries are established. This is likely best approached by the current PJTs, whose systems for establishing subsidiaries in river basins/territories with good potential are well-developed. The results of performance monitoring would be used to drive improvements in service delivery and costs.

The new river basin operations approach would be regionalized by establishing new PJTs from the local offices (subsidiaries) of PJTs I and II that are established as part of the extension of their operations, as referenced above. This would take place once the DGWR had established its regulatory arrangements and the local offices had established their practices and procedures.

Based on the results of earlier studies, commercially viable river basins where O&M functions are well understood would be selected, and the scope for competitively tendering these services for a 10-year concession period, including the necessary regulatory arrangements, would be assessed. Tendering would be piloted in basins or territories that appear most feasible and attractive and where the services to be tendered are well understood.

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