

The Concept of Financial Sustainability of Water Resources Management in a River Basin (The Brantas River Basin – Indonesia, Case study)

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ABSTRACT: Water as natural resource supports economic development and community welfare and it has to be managed in sustainable manner. To achieve its sustainability, it requires securing the budget for both operation & maintenance and development. Up to now, financing for water resources in Indonesia mainly comes from the government. However, in managing water resource infrastructures, community and beneficiaries who get benefits from water resources development and management, should be responsible to bear the contribution cost for operation and maintenance of water resources infrastructures. This contribution is done through application of cost recovery principles, consist of beneficiaries pay principle and government obligation principle. According to the Law of the Republic of Indonesia No. 7 of 2004 regarding Water Resources, it is stated that the cost of water resources management is determined based on the actual budget needed for water resources management. The cost consists of costs for information system, planning, construction, operation and maintenance and monitoring, evaluation and increasing of public awareness. State Owned Company (BUMN)/Local Government Owned Company (BUMD) is the only institution which applies the concept of water resources management corporatization in a whole river basin and has right to take the water service fee from the beneficiaries. That fund, is used to support water resources management in the river basin. Jasa Tirta I Public Corporation has been established to manage Brantas River Basin as a pilot for developing and implementing the corporatization concept of water resources management in a river basin context. In the current phase, the contribution from the beneficiaries is used for supporting operation and maintenance activities post construction period. It is now gradually increasing, eventhough the fund is still not enough for supporting the O&M.

A. BACKGROUND

1. Introduction

Water resources are essential for human's life, not only for present generation but also for the next generation. Due to its importance, it is necessary to sustain them by maintaining the preservation, developing the utilization and controlling its destructive forces by development and management of water resources in integrated, comprehensive and sustainable manner.

Water resource sustainability will be achieved if 6 (six) aspects of sustainability can be fulfilled¹. Sustainable achievements in water resources sector would consist of:

- Technical sustainability, in form of balance between water demand and supply, and between pollution load and assimilative capacity of the water body.
- Financial sustainability, in the form of achievement of funding requirements for the water resources development and management.

- Institutional sustainability, in the form of the ability of management institution to maintain the river system with planning, implementation and operational capacity.
- Social sustainability, in the form of financial participation and positive social control, from stakeholders and the public as general.
- Economic sustainability, in the form of support to the economic development aspects.
- Environment sustainability, in the form of lesser negative impacts on long-term development and well environment supporting preservation of water resources.

Related to the financial sustainability, the available fund from the Central/Local Government for the water resources development and management is limited. This situation will lead to:

- The operation and maintenance of water resources infrastructures could not be well-implemented. It brings to the decreasing of performance those infrastructures. Furthermore, it will increase the rehabilitation cost.
- Cancellation of development of water resources infrastructure, will reduce the flood control

¹Savenije, H (1997), Concept and Tools for Integrated Water Resources Management, IHE Delft.

ability, and sharpen the imbalance of water service capability between one area to the other.

At present, there are many issues in the environmental aspect. But, besides those issues, there are some challenges which are needed to secure the budget:

- Watershed degradation has become an important constraint, since erosion and natural devastation enhance sedimentation that shortens economic life of major dams in the basin and natural base flow degradation during dry season.
- Water quality degradation occurs where pollution from domestic, industrial and agriculture sources has loaded the river and creates span with the designated standard.

Besides those challenges, the funding of water resources management also has chances:

- Limited water availability due to the increasing of water demand and constraints in supply unbalanced condition posing conflict of interest between users. It emerges the change of paradigm toward water; besides as social goods, water has also been considered as economic goods.
- Dealings with water and water resources is categorized as a promising business because it has certain consumer and the demand always increase. That business has a good opportunity for the businessmen and society. Therefore, the financial system shall be developed to guarantee the financial sustainability of water resource management by paying attention to the equitable services to the poor.

2. The system and approach of water resource management

To have a proper involvement of the system, the approach of water resources management, which is recently applied (i.e. bureaucratic, normative, and government centrist) needs to be adjusted. It shall be done more open and responsive by using the community based approach. This is a real form of “water resources decentralization”, that is “from society – for society”.

In that condition, the Government acts as a regulator, no longer as a developer and service provider. As a regulator, the Government creates a conducive condition to increase the society and private sector participation in the water resources management. In this condition, the

water resources in the future shall be managed by professional institution supported by society and private sector participation. The Management Institution is in the form of corporation (State or Local Government Owned Company/BUMN or BUMD), which obtains authority from the Government to collect the financial contribution from the beneficiaries. By BUMN/BUMD form, the Government will have agents to cooperate with private sectors in developing and managing water resources.

The water resources characteristic is much affected by topographical and geological aspect, inter-relatedness as flowing resources (upstream - downstream, in stream - off stream, quantity - quality), and by time and place. As flowing resources, there are systems from tributaries up to the main stream. The stream of the network system may has crossing dimension of the government administrative area. Beside that, relation between up stream and down stream, needs the water resources management approach by hydrologic area based on the “one river, one integrated plan and one coordinative management system” principle.

The form of institution, which can implement both corporatization and government mission, is State Owned Company (BUMN) and Province Owned Company (Provincial BUMD) or Regency/Municipality Owned Company (Kab/Kota BUMD), which is chosen, based on the river basin classification. Based on the rule, BUMN/BUMD shall be available in the form of Public Corporation (Perusahaan Umum). The chosen form is based on the economic condition of the society and water resources potency as well as the Government policy as the owner of water resources.

In terms of management system, the corporate management shall apply the good corporate governance principles, where the management progress report is reported in the stakeholders meeting (River Basin WRM Committee). The water resource management is implemented by applying the effective water governance principles. Effective water governance can be implemented by applying the Quality Assurance Management System ISO. Thus, the corporate management and water resources management will be done openly, responsively and accountably which is the main requirement to guarantee the financial

sustainability in water resources management.

B. NATIONAL BASIC LAWS AND REGULATION RELATED TO THE FINANCIAL SYSTEM

Article 77 of the Law of the Republic of Indonesia No. 7 of 2004 arranges the finance of water resources management that consists of:

- (1) The cost of water resources management is determined based on the real budget needed for water resources management².
- (2) The costs³ consist of:
 - a. Cost for information system;
 - b. Cost for planning;
 - c. Cost for construction;
 - d. Cost for operation and maintenance; and
 - e. Cost for monitoring, evaluation and increasing of public awareness.
- (3) The resources of fund for each item can be supported by:
 - a. The Government budget;
 - b. Private sector budget; and/or
 - c. Revenue from water resources management fee.

Article 78 of the Law of the Republic of Indonesia No. 7 of 2004 explains about:

- (1) The Cost for water resources management as stated in Article 77 Paragraph 1 should be burden by Government, local government, and state owned company/local government owned company, cooperation, other body, and individual or corporate private institution.
- (2) The financing of water resources management that its responsibility belongs to Government and Local Government as mentioned in Paragraph 1, will be done based on their authority in water resources management.

Regarding the financial support from Central/Local Government, in Article 79 Paragraph (2), it is stated that the service for social purpose and public service and welfare, Central and Local Government – in a certain limitation – could support

² The real budget needed for water resources management means the necessary fund needed for financing the water resources management to sustain the function of water resources.

³ For each type of cost shall cover the 3 (three) aspect of water resources management, i.e. conservation of water resources, utilization of water resources, and controlling of destructive power of water.

fund for water resources management to the water resources institution BUMN/BUMD.

Other regulations related to the water resources management financing, i.e.:

- Government Regulation No. 6 of 1981 on Funding for Water Resources Infrastructure Operation and Maintenance, Paragraph 2: Contribution to operation and maintenance cost of water resources infrastructure covering: (1) Fund collected as a payment from the parties who have obtained the benefit of the use and the comfort through the availability of water, from water institutions, and through the availability of water resources infrastructures as the achievements of Corporation's management either for immediate use or subsequent use for third party; and (2) Fund collected, due to the activities that cause pollution in water and water resources in the working area of the State Own Company.
- Government Regulation No. 22 of 1982 regarding Water Resources Management:

Article 40: Finance for water resources management both for general services and give direct benefit for a group of a society shall be born by the Central/Local Government in line with their authority and responsibility.

Article 41: Finance for operation and maintenance of the water resources infrastructures related to the general services shall be born by Central/Local Government in line with their authority and responsibility.

C. THE BASIC PRINCIPLES AND POLICIES OF FINANCIAL SYSTEM

The basic principles and policies of financial system of water resources management can be mentioned as follows:

1. Basic Principles

a. Cost Recovery Principle

In order to carry out a sustainable water resources management, the available budget needs to be secured. The Full Cost Recovery principle covers:

- O&M Cost Recovery:
 - Operation and Maintenance of water resources infrastructure, and
 - Catchment management and water resource conservation.

- Investment Cost Recovery, i.e. the return cost of investment and reserve for the cost of water resources management.

The amount of cost is calculated based on the decided formula and the real needs for water resources management in each river basin.

b. Mechanism of Contribution

The mechanism of contribution is done by applying the principles:

▪ Beneficiaries Pay Principle

The specific-commercial users must pay the contribution in the form of water service fee to River Basin Management Institution. This arrangement is stated in the letter of permit to abstract/use the water and in the contract agreement which covers the balance between rights and obligation. The beneficiaries pay principle is complemented by “users pay principle” and “polluters pay principle”.

▪ Government Obligation Principle

The Central/Local Government has their responsibility to provide the fund from national/local budget needed by river basin management institution in the form of Public Service Obligation to bear the cost for funding social service (irrigation) and for the welfare and safety of the people (flood control, water quality management, etc.)

c. Acceptability

To get the commitment for implementation, the amount of contribution must be acceptable by stakeholders. The criteria must be fulfilled are:

- Fair: each group of users feel that the cost they must pay has been calculated fairly based on the benefit gained along them.
- Transparent: in order to make it as fair as possible, the cost calculation should be done transparently.
- Participative: in order to make it transparent, all parties participate by using the mechanism that has been established before.

Some cost allocation method that can be applied in water resource development and management:

- Quantity Based Method: the Cost allocation is done proportionally based on the physical criteria of water usage which is relatively countable (e.g. volume, discharge from reservoir or percentage of volume of water).

This method can not be used for energy generation.

- Priority Based Method: If the infrastructure has only a single purpose, that purpose is considered as a main priority. The cost is charged to the main purpose, another non-priority purpose is not necessary to pay contribution.
- Benefit Based Method: The cost allocation is done based on the benefit gained from each purpose (water value-economic benefit). Even though the calculation is relatively more complex, this method is most likely used due to the fair cost allocation.

d. Transparency and Accountability

To get support from the beneficiaries in giving the contribution, the use of fund shall be done transparently and in accountable manner based on the agreed mechanism.

e. From Water-Back to Water

The financial contribution from the beneficiaries is used to bear the cost of water resource management in order to optimize the service so that the users and society can take benefit from it (earmarked fund).

f. Flexibility of Use of Fund

In the program arrangement, the fund collected from the users contribution shall be used flexibly based on the priority without considering the government administrative area/boundary and certain group of users.

2. Basic Policy

a. Steps of Implementation

Considering the society ability and the early adaptation, the implementation of full cost recovery can be done gradually by determining the time frame of each stage (**See Attachment-1**).

The contribution from specific and commercial users will increase gradually by applying the beneficiary pay principles which covers:

▪ The Stage of O&M Cost Recovery

The specific-commercial users give contribution for O&M of water resources management (increase gradually) which covers the O&M cost of water resources infrastructure, catchments management and water resources conservation and the

overhead cost for the management.

▪ **The Stage of Full Cost Recovery**

The specific-commercial users give contribution for the O&M based on their portion of responsibility plus the contribution to return of the investment of the water resource infrastructures (gradually increase).

The responsibility of Central/Local Government in applying the Government Obligation Principles covers:

▪ **The Stage of O&M Cost Recovery**

The Central/Local Government gives cost contribution for the O&M to facilitate public and social services based on their portion, give subsidy for O&M of water resources management and provides the water resources development and investment refund (for commercial, public and social services).

▪ **The Stage of Full Cost Recovery**

Central/Local Government gives O&M water resource management cost contribution and cover the depreciation cost of investment for public and social services based on their portion, cover the depreciation cost of investment deficiencies for commercial service (decrease gradually).

After the stage of full cost recovery has been reached, the next development cost can be raised cooperatively with private sectors, by signing BOT or BOOT contract.

b. Cross Subsidy

The cross subsidy on contribution from commercial users group to social users group for water resources management shall consider general public norms and it shall be determined transparently .

c. Incentive and disincentive

The incentive and disincentive system are applied to support the water efficiency and water pollution control. Application of the progressive tariff and other economic instruments could be developed for promoting efficient use of water for irrigation and pollution control.

D. THE BASIC CONCEPT OF FINANCIAL SUSTAINABILITY OF WATER RESOURCE MANAGEMENT IN A RIVER BASIN

1. The financial source

Water resources development which is done by constructing water resources infrastructure generally has multifunction purposes. It is mostly financed by Government. The benefit of the development can be grouped into “commercial service⁴” i.e. for commercial users (industries, agro-business, fishery, domestic water supply, and electric power generation) and for “social services” (irrigation) as well as “public service⁵” for safety and welfare of the people (flood control, water quality control, and ecosystem conservation).

In the developed river basin, communities get secured water services and flood control. On the other hand, in the undeveloped river basin, communities have no secured water service and flood control. In order to achieve the balance between them, the financial source for water resources management shall be supported by the beneficiaries. The funding from both Central and Local Government, step by step will decrease in line with the increasing of contribution from the beneficiaries. In the future, the national/local budget will only be needed to support the development and management of water resources for the portion of public and social service. The portion of cost for commercial service will gradually be burdened by the related beneficiaries based on the portion of the benefit gained.

The financial sharing can only happened if the existing opinion that “water is government business” could be changed gradually to the opinion that “water is not only government business, but also all stakeholders (our) business”. To get the understanding and

⁴ Commercial service is the service given to the specific users. They are users who have permission to use water and or water resources (Electric State Company, Water Enterprise, and Industry). The service given to these groups is stated in the agreement, which covers the right and obligation based on the recent rule.

⁵ Public service is the service given to the non-specific/public users who use water without certain permit (ex. for daily life) or for social purpose (irrigation) or for the society who take the benefit on flood control and water quality management. The service given to this group is not stated in certain agreement.

commitment, it is necessary to involve the society into discussion and decision making process through the agreed mechanism.

2. The financial system of water resources management

Besides paying the tax for abstracting and using the water, the specific – commercial users also pay the contribution (water service fee) to water resources management institution for the service they have received. Based on the definition of tax, the tax for abstracting and using the water levied by Local Government will be used to fund the Local Government Administration and development. The fund is used based on the priority and the policy of the Local Government, so the tax has been paid will be difficult to be allocated for water resources management. Based on the understanding of contribution, the fund collected from the society is used for funding the service to the society. Thus, the earmarked fund principle can be applied in this contribution i.e. water service fee. The arrangement for this contribution has been stipulated in Law No. 7 of 2004 regarding Water Resources, Government Regulation No. 6 of 1981 regarding O & M of Water Resources Infrastructures Financing (Article 3 and Article 4), Government Regulation No. 22 of 1982 regarding Water Resources Management (Article 40 and 41) as mentioned before.

The amount of contribution for each group of beneficiaries is calculated fairly and transparently based on the benefit gained – economic benefit. In order to avoid the unfair competition, the contribution tariff for each group shall be determined by the same value without considering the location.

The amount of contribution fee components for catchments management is allocated to each administrative area as an additional fund to manage the catchment area. Thus, by this idea, there will be a contribution mechanism for the beneficiaries in the downstream to manage the catchments in the upstream. The amount of cost allocation can be calculated based on the size of the catchment area in each administrative boundary with an adjustment factor based on the ratio classification of maximal and minimal discharge. The philosophy used is that the larger area and the more critical of catchments condition, it will get more fund for conservation.

Using this method, the cooperation between Water Resource Management Institution and Catchment Management Institution can be developed and it will create the mechanism contribution from downstream to the conservation activity in the upstream.

The Central/Local Government gives the contribution to WRM Institution to finance the public service and welfare (flood control, water quality management) and give a subsidy for social service (irrigation). Basically, the contribution and subsidy come indirectly from non-specific/public/social users who must pay all kind of taxes which is related to water to Central/Local Government. As an example is land tax, where the land tax's tariff will increase inline with development of the area, such as some area from rainfed paddy field is converted to the technical paddy field, from flooded area to the area free from flood).

The stages of water resources financing can be seen on **Attachment-1**. In the first stage: O&M Cost Recovery , Water Resource Management Institution will be formed into Perum-Perumda/Balai PSDA and will be able to make service contract with private institution by doing. In this stage, Central/Local Government gives contribution for O&M to facilitate public and social services and provides the water resources infrastructures development and investment (for commercial, public and social services). The specific-commercial users give contribution for O&M cost which covers the O&M cost of water resources infrastructure, catchment management and water resources conservation.

In the second stage: Full Cost Recovery stage, Water Resource Management Institution will be formed into a public corporation which its share can be owned by the public, user, private institution and Government. In this stage, Water Resource Management Institution will be able to cooperate with private institution by doing BOT, BOOT, etc. For water resources financing, Central/Local Government gives O&M cost contribution and provides the refund of water resource development investment for public and social services, provides the fund of the water resource development investment deficiencies for commercial service. The specific-commercial users give contribution for O&M of water resources management based on their portion of

their responsibility and give the contribution to return of the investment cost.

3. Other approach of finance of water resource management

Another approach of financing of water resource management is “*multi - level basin management*”⁶ concept. This concept can be proposed as an interim step to guarantee the unity of natural resource management. In this concept, there are at least 3 (three) levels of management:

- The Institution which will manage the water resources infrastructures in the main system, which is called as Main System Management Agency/Badan Pengelola Sistem Utama (BPSU),
- The Institution which will manage the water resources infrastructures in the supporting system (tributaries) called as Supporting System Management Agency/ Badan Pengelola Sistem Pendukung (BPSP),
- The Institution which will manage the water resources infrastructures in the beneficiaries system, called as Beneficiaries System Management Agency/Badan Pengelola Sistem Pemanfaat (BPSM).

BPSU functions as a whole seller which gives the service to BPSM. Meanwhile BPSM functions as a retailer which facilitates the users directly. In the process of giving the service to BPSM, BPSU gets the supply from BPSP. But there are users who directly get the service from BPSU or BPSP. Those are the users who directly take the water from the main system or supporting system. As the institution for the whole river basin, BPSU has its central function to manage a river basin comprehensively. In order to control the water taking, BPSP and BPSU must have responsibility to manage water resources infrastructures in the river, including the water intake for each BPSM/users. The schematic diagram of Water Resource Management Institution in the Multi Level Basin Management can be seen on **Attachment-2 and Attachment-3**.

Considering that the water resources is not only for commercial purpose but also for public/social purpose, BPSU should be a neutral

and professional institution which applies the balance between healthy company norms and the best public service on water resources based on the public participation and private sectors partnership.

The form of institution which can implement both corporatization and government mission is State Owned Company (BUMN) and Province BUMD or Regency BUMD based on the river basin classification. BPSP is in the form of Water Resource Management Office (PSDA Office) which gradually will become BPSU in line with increasing financial capability. Based on the rule, BUMN/BUMD is in the form of Public Corporation (Perusahaan Umum). The chosen form is based on the economic condition of the society and water resources potency as well as the Government policy as the owner of water resources.

The corporate should be done by applying the good corporate governance principles, where the management progress report is reported to the stakeholders meeting.

E. APPLICATION OF SUSTAINABLE FINANCING SYSTEM IN THE BRANTAS & SOLO RIVER BASINS, INDONESIA

1. Application of the system and the water resources management approach

In Brantas and Bengawan Solo River basins, the BUMN, i.e. Perum Jasa Tirta I (PJT I) has been established in 1990 based on the Government Regulation No.5/1990 and then revised by the Government Regulation No. 93/1999. This BUMN is a pilot to develop and to apply the corporatization concept to manage water resources in whole river basin. The purposes of the establishment are:

- Gradually minimizing the load for National and Local Government Budget,
- Gradually increasing the O&M contribution from the users (beneficiaries),
- Giving the best-responsive service toward the demand and the hope from stakeholders,
- Emerging the conducive working situation for private sectors,
- Applying the accountability system to shareholders and stakeholders.

Central/Local Government as the owner of water resources act as the regulator for water resources management which is done by PJT I

⁶ The concept initially introduced by Dr. Ir. Roestam Syarif, MNRM.

as the operator. In term of water services to the users, PJT I functions as the service provider. While users and society are called as the beneficiaries (users). Water service is stated in contract which has not covered equally the right and obligation for each party. The function of developer to construct the multi-function infrastructure totally still becomes the responsibility of Center & Local Government because the water service fee has not yet reached its economical tariffs.

The company management reports to the Owner of the Company (Central Government). The management supervision is done by supervisory board consisting of the Representative of the Owner of the Company (Ministry of State Owned Company), Department of Public Works, as well as Representative of Provincial Government.

The water resources management is reported in the meeting of Water Resources Management Committee (WRMC) which is consist of main stakeholders (Local Government, Local Water Supply Enterprise, Electricity State Company, Jasa Tirta I Public Corporation, etc). WRMC could be considering as the embryo of Local Water Resources Council. At the present, the report is still limited to water distribution and allocation and flood control. The members of WRMC are still need to be improved to cover all representatives of stakeholders, in order to have the water resources management being implemented comprehensively, transparency and account- ability. Furthermore, the function of Local Water Resources Council needs to be improved to cover all aspect of water resources management including financial matters.

The auditing of company management and water resources management is done by independent auditor. The water resources management has been applied the Quality Assurance Management System ISO. The application consistency is reviewed periodically (every 6 months) by the certificate publisher (SGS England). Even though the management of the company has followed accountability norms, the application of good corporate governance and effective water governance principles are need to be increased.

2. Application of water resources management financial system

The water service fee has been applied in Brantas and Bengawan Solo River basins. The contribution is paid by specific-commercial users (Water Enterprise/PDAM, Electricity State Company/PLN, and industry). The authority to take the contribution is stated in Presidential Decree.

Beside paying the contribution, the users must also pay water tax to theLocal Government. For the users who take the water from irrigation system, PJT I works cooperatively with Provincial Water Resources Service to make save the service. For this cooperation, part of water service fee is allocated to Provincial Water Resources Service to support the water allocation.

The contribution from specific – commercial users is step by step increasing. The comparison between the contribution and the normal O&M requirement in Brantas River Basin by PJT I can be seen in the following table.

Description	Unit	1992	1998	2003	2005
Total Revenue	Billion Rp	9.41	26.12	38.57	52.47
- PLN	Billion Rp	5.07	9.67	17.99	29.14
- PDAM	Billion Rp	2.22	2.60	9.90	11.35
- Industry	Billion Rp	2.12	4.07	10.68	11.98
Normal O&M requirement	Billion Rp	21.70	43.08	95.1	106.7
The O&M degree	%	43.4	60.6	40.56	49.17

And in Bengawan Solo River Basin as shown in the following table.

Description	Unit	2003	2005
Total Revenue	Billion Rp	2.84	3.88
- PLN	Billion Rp	1.36	1.54
- PDAM	Billion Rp	0.043	0.165
- Industry	Billion Rp	1.44	2.18
Normal O&M requirement	Billion Rp	37.51	41.85
The O&M degree	%	7.57	9.27

F. CONSTRAINTS

Even though there is an increment, the contribution from the users has not yet reached O&M Cost Recovery. The cost components in this contribution still cover only for some part of O&M cost for the infrastructures and the management cost. The cost for maintenance for catchments and water

pollution control is still minimum. The maintenance cost portion for catchments is used to fund the forestation, terracing, constructing of check dam and the information sharing which is done together with Local Government Institution, Universities and Non Government Organization. The investment cost for water resources development is not yet charged in the water service tariff. Therefore, the contribution is earmarked fund which applies the “from water – back to water” principles and there is fund flow mechanism from the users in downstream to support the activities happen in upstream. Beneficiary Pay Principles in certain stages can be applied.

The fund from the Government for public service and public welfare (flood control and water quality) and social service (irrigation) has not yet properly realized. That fund is mostly used for rehabilitation, which is done by the water resources development project. Thus, the application of Government Obligation Principles cannot be done properly and the allocation cannot be done accurately.

Since the O&M Cost Recovery cannot meet its target, the maintenance of water resources infrastructures need to be done selectively based on the priority scale. The deferred maintenance will make the water resources infrastructure not work well and it will need bigger cost for rehabilitation. The rehabilitation can be avoided if O&M Cost Recovery works well implemented, so that the preventive maintenance can be done fully.

The cost allocation to the beneficiaries could not be done properly because it is not easy to get mutually agreement toward the formula for the cost allocation. There is no guidance established yet.

The water service fee tariff for industry has been arranged using the progressive tariff based on the volume used. The tariff has been increased many times with quite significant value. It emerge the application of recycling technology. However the use of economical instrument to support efficiencies used of irrigation water usage cannot be done because by laws, the water service fee and the application of transferable permit system for the water used by farmers is not allowed. Even though there is a big demand of private sectors to work cooperatively with PJT I, the interest of private sector in the developing water resources infrastructures doesn't increase. It is due to the water tariff is lower than its economical price.

DATION

1. Water resources sustainability will be achieved if 6 (six) aspects of sustainability can be fulfilled, i.e. technical, financial, institutional, social, economic and environment sustainability.
2. The cost of water resources management is determined based on actual/real budget needed for water resources management including conservation, water use and controlling of destructive power of water.
3. The financial sharing for water resources management can only happened if the opinion “water is government business” could be changed gradually to the “water is not only government business but also our (stakeholder) business”
4. In order to have a proper financial sharing, the guidance on the cost allocation formula should be established.

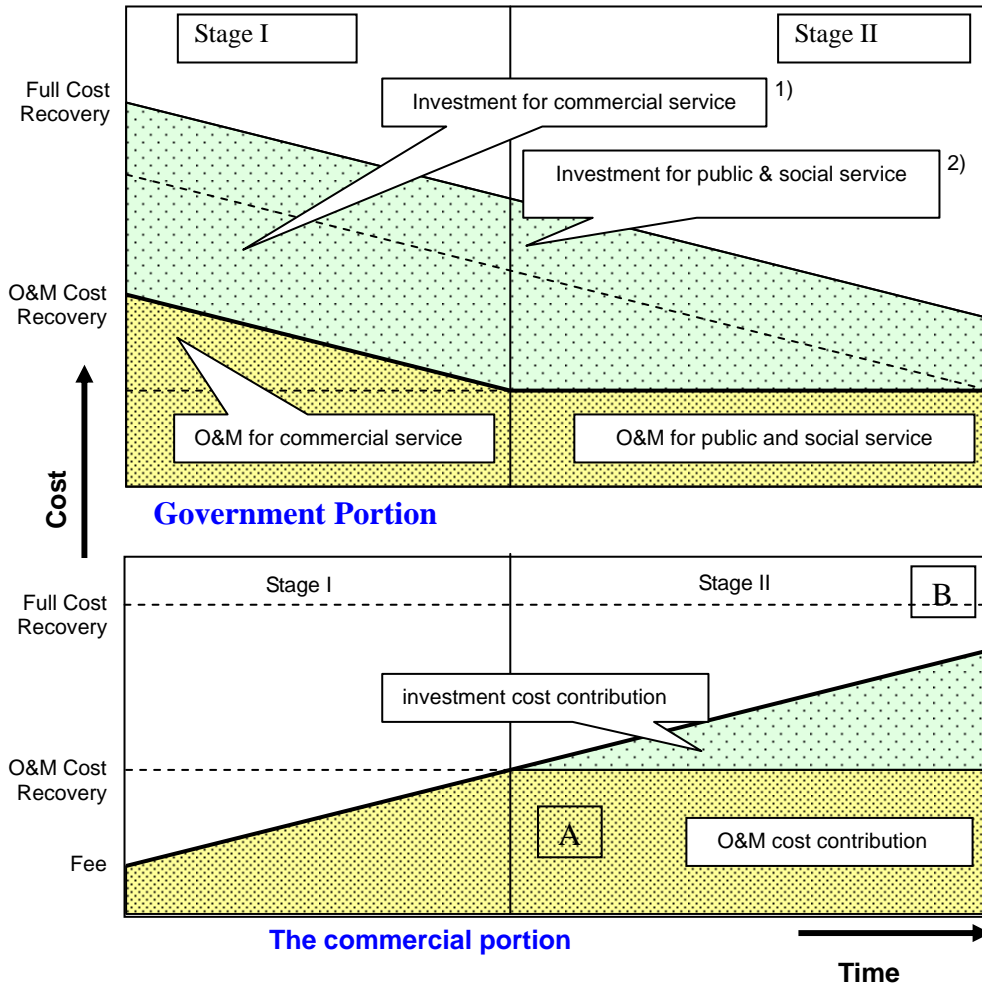
Jasa Tirta I Public Corporation, Indonesia

May 2006.

F. CONCLUSSION AND RECOMMEN-

Attachment - 1

The Stage of Form of Water Resources Financing



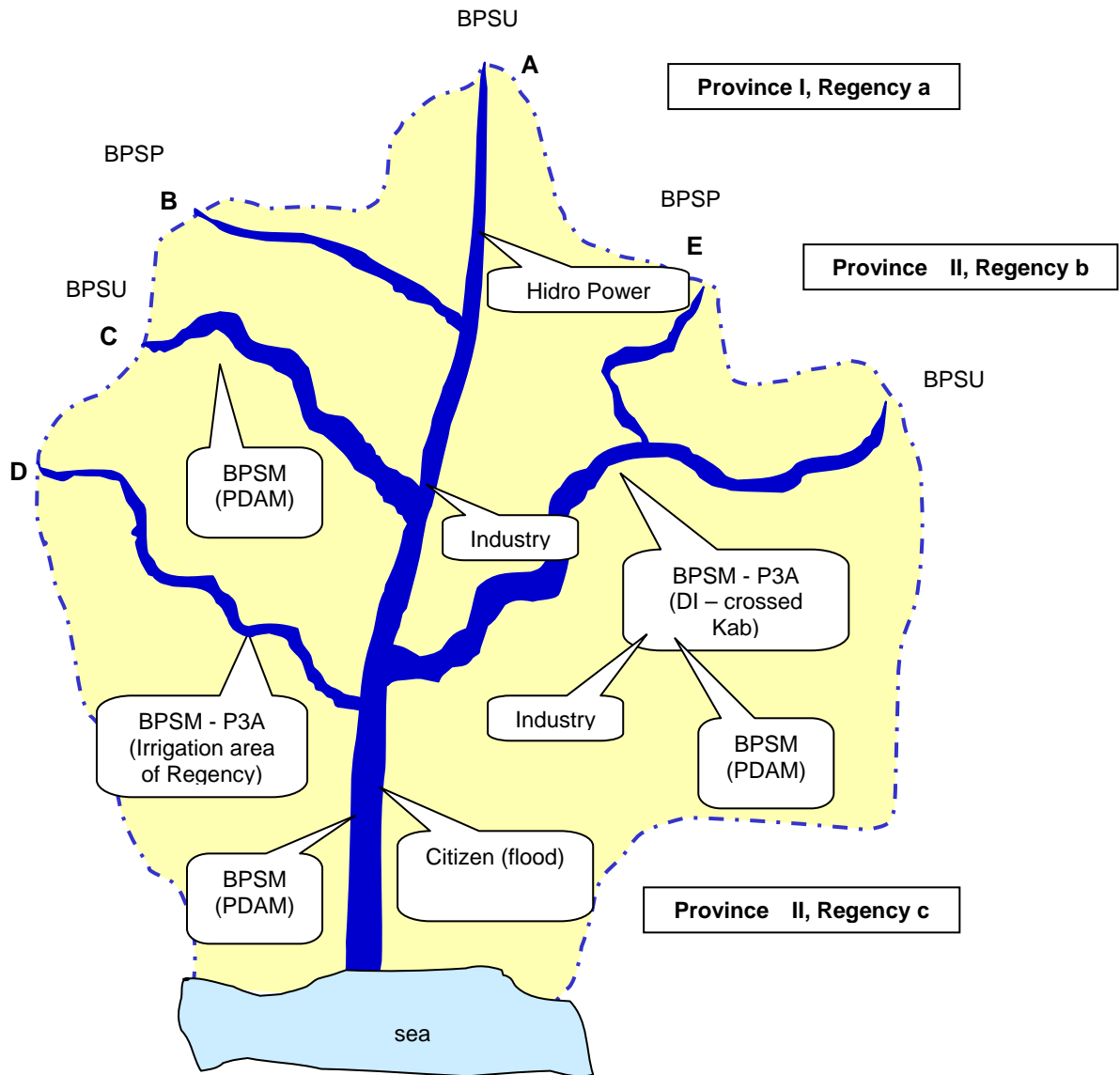
	Step I	Step II
Private Institution Participation	Service Contract	Management Contract
Institution Status	Perum - Perumda/ Balai PSDA	Perum/Perumda is Public Corporation

Step I : O&M Cost Recovery stage
 Step II : Full Cost Recovery stage

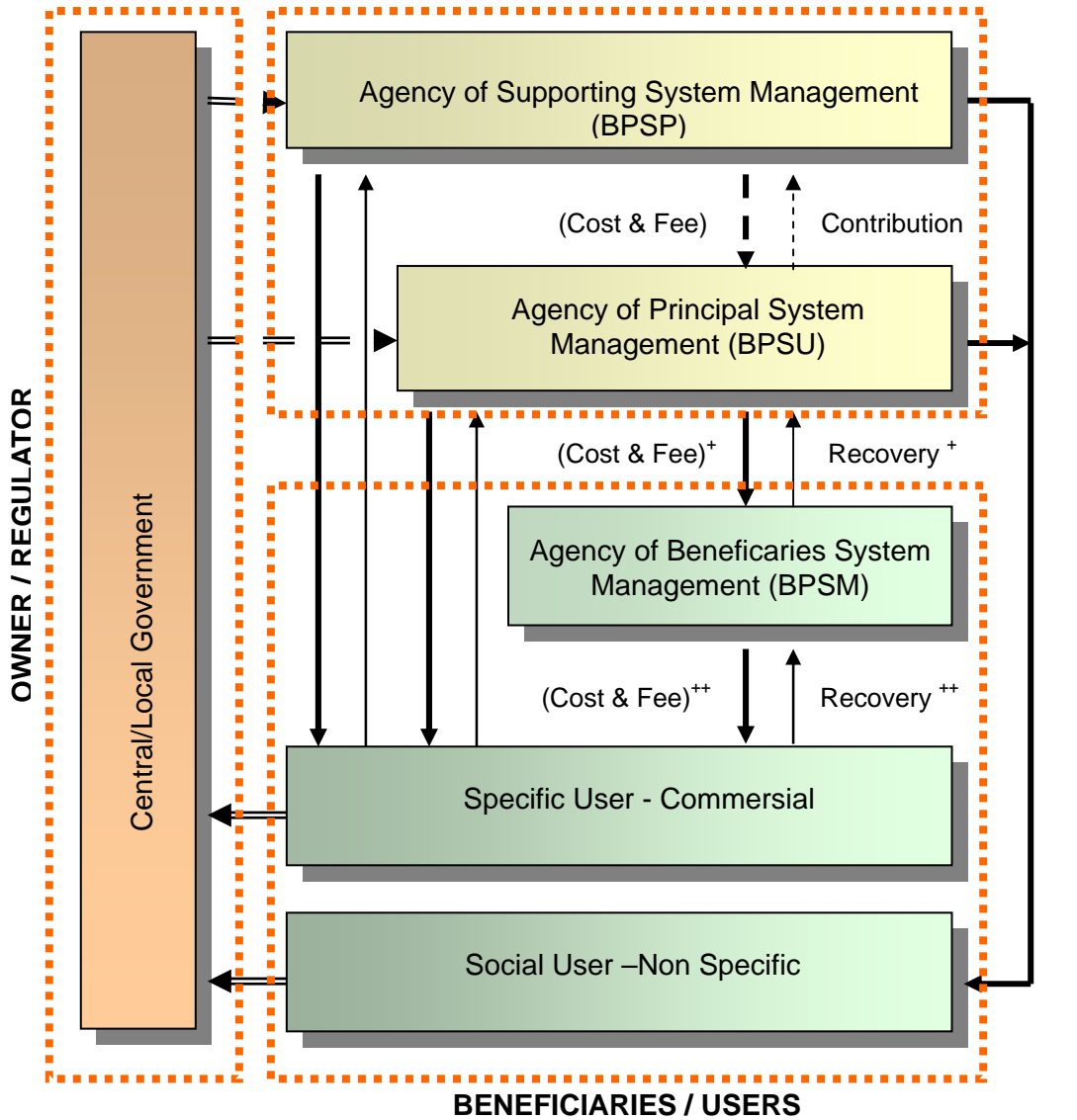
After reaching Full Cost Recovery step:

- Water Resource Management Institution will be formed into Public corporation which its share can be owned by the public, user, private institution and Government.
- Water Resource Management Institution will be able to cooperate with private institution by doing BOT, BOOT, etc.

Attachment – 2
**WATER RESOURCES MANAGEMENT
IN
MULTI LEVEL RIVER BASIN MANAGEMENT**



THE FINANCIAL SYSTEM DIAGRAM IN MULTI LEVEL BASIN MANAGEMENT



- Water service
- Fee payment
- ⇒ Tax payment
- - - - -> Service from institution in the up stream
- · · · ·> Financial contribution
- == => Contribution for general service and subsidies for social service