Project Report

Development of Effective Water-Management Institutions

A Regional Study Implemented by the
International Water Management Institute

With Financial Support from the Asian Development Bank (RETA 5812)

Final Report, Volume V, Appendix II
Towards Water Sector Reforms
Policy Case Study on Indonesia

30 June 2003

IWMI
International
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Contents

Indonesia's Water Sector Policy and Institutional Reform Process

Overview

This paper attempts an institutional analysis of Indonesia's ongoing water sector reform. The section on "Water Sector Institutional Characteristics" presents detailed institutional models of a national water sector and basin water resources management that could be used to analyze the existing institutions and serve as checklists for developing legal, policy and administrative reform agendas to improve their performance. The next section reviews Indonesia's water sector's institutional environment prior to the reform process. To understand the national factors affecting the water sector's institutions and their behavior, a description is given of the prevailing government, public administration and the legal systems up to 1999. The section on "The Prevailing Water Sector Institutions in 1999" discusses each of these systems in detail in terms of the sector. The basic sector management paradigm is described in terms of the existing water law and its various regulations and is followed by their implications for the sector's administrative structure and its organizations. Since performance is linked to lacunae in the prevailing planning, programming and budgeting system, this too is summarized for understanding its influence. The evolution of the academic water resources policy is described with emphasis on such policies being ignored by decision makers. The better articulated 1987 Irrigation Operations and Maintenance Policy is also outlined so that the causes of its failure can be better understood in a later section. The section on "Sector Performance Assessment ('Rules in Use')" assesses sector performance in terms of its physical performance, sector management efficacy, financial and fiscal sustainability, and the level of economic efficiency and its governance. The conclusion reached is that by 1998, the water sector was in dire need of a comprehensive reform in order to remove some of the causes of poor performance.

The section on "Evolution of the Water Sector Reform Initiative and Its Preparation" describes the evolution of the ongoing reform initiative in terms of an atmosphere of national crisis, an ADB-supported irrigation management study and, an initiative by the World Bank to place overall reform of the sector as a condition for further sector support. The basic elements of the World Bank's reform agenda and strategy are described, accepted and evolved into government commitments in the form of a Letter of Sector Policy and Policy Matrix in support of a Water Resources Sector Adjustment Loan (WATSAL). The loan's preparation gives rise to a presidential declaration of irrigation management reform, the institution of an interministerial coordination team and, an interagency WATSAL Task Force to prepare the detailed legislative and policy outcomes that are conditions for the loan's tranched disbursement. It also heralds the formation of a Donor Group to support the reform and lobby for better policies and sector performance. As a result of the preparation process, public consultations about policy proposals and partnership with NGOs are introduced into Indonesia's public administration. The section on "Sector Reform Program of the Government of Indonesia" describes the agreed and comprehensive water resources and irrigation management reform agenda, as well as the manner in which issues and details are left to the WATSAL Task Force and the government to determine in a sovereign manner, and without foreign consultant input as a national capacity building measure. The World Bank's original risk perceptions for the reform process are listed for comparison with what actually happened once the reform process began.

The section on "Factors Affecting the WATSAL Reform Process" describes the various factors that have complicated and delayed progress during the reform process and have affected the efficacy of the Task Force's work and output. The reform process took place during two cataclysmic events in the Indonesian public administration history: the fall of the New Order and a clamor for reforms together with a decentralized government system. The enormous impact of these events on the sector is described along with their implications for finalizing the reform agenda outputs. A major issue that has arisen is that the water law and its regulations will not be tactically amended but must be replaced with a whole new modern paradigm and structure. A process that was originally to have been completed in 18 months will take 3 years or longer. After two extensions, the loan closes on June 30, 2003 and the section on "Outcomes of the WATSAL Reform Process to Date, Risk Assessment and Lessons Learnt" proceeds to review the progress to date and the likelihood that the loan may close without completing its reform agenda. New risks are also perceived that the paradigm shift may not be completed for lack of political will and unforeseen complications inherent in the government decentralization process.

Water Sector Institutional Analysis Framework

Water Sector Institutional Concepts

The institutional model of a national water sector in developing countries. The analysis of institutional reform should be based on some "best-practice" institutional models that indicate: a) the detailed components of water sector policies, legal frameworks and administration; b) the exogenous factors that influence these basic components of a sector institution; and c) the interlinkages between all subcomponents as determinants of institutional performance. The Saleth-Dinar model of water sector institution environments and their interlinkages were chosen as a framework for the five-country study.[1] The basic model was elaborated upon by Bandaragoda for a river-basin context. The author has chosen to further elaborate the model to suit the national context of water sector reform in Indonesia (see annexes IA and IB). This elaboration adds the internal aid agencies as an external factor and the role of stakeholder/interest groups as affecting sector performance. It also adds stakeholder/civil society institutions and the sector MIS and Decision-Support system as institutional components affecting sector performance. It lists four types of basic rules as describing water sector organizations. When describing the Saleth-Dinar "Temple Metaphor of Institutional Analysis" it adds additional factors relevant in an environment in which donor views need to be considered. These are environmental safeguards, water quality rights and priorities, apex intergovernmental coordination mechanisms (e.g., a national water council), stakeholder and community participation, agency mandates and roles, subsidiarity issues, public administration governance, regulatory enforcement, agency quality assurance, asset management, human resources management and capacity building. These factors all arise in the description of the Indonesia water sector and its reform agenda (see annexes for tables, model diagrams, etc.).

An institutional model of basin water resources management (BWRM). The Bandaragoda basin institutional environment model and the proposed Five-Country Study's model components for developing river basin institutions were not regarded as adequately detailed for the complex set of factors that need to be considered in reviewing basin institutions and crafting legislation and policies for corporate and government river-basin agencies. For this, the author offers the Basin Environment and Temple Metaphor models shown in annexes IIA and IIB. The basic assumption is that in many countries, regional legislation, policies and water administration of state or provincial governments also affect the basin-management institutions. Although consistent with the national framework, they may have important regional variations depending on the degree of autonomy allowed by regional governments. Thus, the model shows BWRM as a subset of both national, regional and local basin factors and linkages affecting BWRM performance. A set of five relevant institutions are to be considered in the basin management institutional context: a) overall regional government water resources, laws, policies and administration; b) regional institutions for government agency coordination and collaboration; c) water stakeholder information, participation and empowerment institutions; d) regional fiscal and financial policy frameworks affecting basin agencies; and e) the BWRM agencies and organizations. Eight different sets of rules are identified as determining basin

[1]Bandaragoda D.J.: *A framework for institutional analysis for water resources management in a river-basin context: Five-country study on developing effective water management institutions.* IWMI, Colombo, Sri Lanka, July 20, 2000.

management and service delivery organizations in annex IIA. The detailed components for each of the five institutions are suggested in annex IIB.

Assessment Criteria for Sector Policy Reform Interventions

One may apply performance criteria to determine if a water sector is performing well, but what would the criteria be for assessing a sector reform agenda and strategies? The author has reproduced a slightly modified set of questions and matrix developed by Dr. Greg Browder of the World Bank in annexes IIIA and IIB for this purpose. This framework can be applied to assess the Indonesian sector reform agenda as shown in annex VIIIB. Annex IIIC sets the framework into the more conventional elements making up a water sector management program.

Institutional Differences between Water Resources Management (WRM) and Water Use-Service Delivery Management

Integrated water resources management (IWRM) is generally described as the "Dublin Principles" mentioned in Bandragoda's Study framework paper and regards the river basin as the basis of IWRM. However, IWRM could be practiced with different emphases depending on the fundamental policy approach to water resources management. One management approach is the conservative "economically efficient basin water use and service delivery" system that focuses on water development and utilization; the other is the more holistic modern "integrated and sustainable" BWRM that focuses on environmental and social sustainability as well as on economic efficiency. In the economist's parlance, basin water use management focuses on producing and regulating water "goods and services;" BWRM however, focuses on the government's enabling, regulatory and welfare provision roles. Water use management focuses on toll goods and private goods while BWRM focuses on public and common pool goods. The sector performance criteria of the two approaches are also different as they have different objectives. The analytical implications of approaches are shown in annex IIIA. This model illustrates the nature of the water sector reform agenda in Indonesia (the theme of this paper), namely a movement away from institutions based on laws, policies and water organizations focused on a water use management paradigm to one of a more sustainable IWRM approach based on stakeholder involvement and better governance. A detailed taxonomy of the different nature of goods, services and management focus is shown in the matrix in annex IIIB.

Sector Institutional Capacity Building Concepts

Even if an institutional reform is successfully accomplished, its implementation requires a major organizational capacity building program. This is not only one of imparting skills but also requires building accountability, quality assurance, asset management, etc., into a civil service environment not used to a demand-based service delivery orientation. Annex V exhibits conceptual capacity building models developed by Dr. Paul van Hofwegen of IHE, Delft for a post-reform follow-up capacity building program. It is not directly relevant to this paper but is a useful contribution to water-sector organization institutional analysis.

Water Resources Sector's External Institutional Environment (Rules in Force)

Indonesia's Government and Public A dministration Institutions Prior to 2000

The impact of constitutional and public administration "rules" on the water sector. As this paper deals with a review of the process[2] of substantive[3] legal, policy and administrative reforms of water resources and irrigation management institutions, it is essential to understand the constitutional aspects (rules and rules-in-force) of the government, legislation and public administration system in Indonesia during 1998 when the WATSAL reform program was formulated. This system was based on the principle of government administrative and fiscal "deconcentration" of the prevailing hierarchical framework of national government authority.[4] Under the deconcentration concept, the national legislature and the government could devolve any public administration functional responsibilities and fiscal authority of their choice to lower levels of government (regional and local). The overriding consideration in deconcentration is administrative efficiency and efficacy, not empowerment of lower governments or their constituent communities.

National Government System

System of government prior to 2000. According to the 1945 Constitution, Indonesia is a centralized unitary Islamic state comprising an archipelago of over 7,000 large and small islands that are grouped into administrative regions and several autonomous areas. The administrative regions are 27 Provinces that are further subdivided into 238 districts (*kabupaten*) and 65 urban municipalities (*kotamadya*) of equivalent standing. Thus there is a three-tier government system: the national level or center (*Pusat*), the provincial government level (*Tingkat I abbreviated as Tk. I*) and the local government level (*Tk. II*). Kabupaten are subdivided into subdistricts (*kecamatan*) and, further into villages (*desa*), whereas Kotamadya are subdivided into neighborhoods or wards (*kelurahan*). The State is presided over by a President—assisted by a Vice President—who heads the "Executive Branch" of the government. The President appoints the Provincial

[2]"Process" describes how water sector institutional "rules" are being changed/reformed to improve sector output/ performance. Political, constitutional and bureaucratic contingencies and behaviors that arise during the WATSAL process give rise to changes in how the agreed process rules are applied and give rise to changing "rules in force."

[3]"Substance" in this paper's context relates to the government's ongoing WATSAL analytical activities of: a) how existing water sector institutions (rules and rules-in-force) influence water uses and the management of provision of water resources and irrigation "goods" and service delivery at the national, regional/river basin/local levels; and b) what policy and institutional changes/reforms are needed to improve the water sector's performance in the provision of its goods and services. The "goods" refer to activities categorized under institutional economics as private goods, toll goods, public goods and common-pool goods. Sector institution performance in the provision of goods and services is evaluated in terms of criteria such as physical productivity, managerial efficacy, governance, equity and sustainability.

[4]In some cases, there is also a principle of "assistance tasks" (*medebewind*) whereby the national government assists a regional government to carry out tasks on its behalf through joint administration.

Governors (*Gubernor*) who, in turn appoint the Regents (*bupati*) and Mayors (*walikota*). Regents appoint Kecamatan Heads and Village Heads while Mayors appoint Ward Heads. Metropolitan Jakarta as the seat of the government is given a special autonomous status (like Washington D.C.) as "DKI Jakarta" and is headed by a Governor. The metropolitan area of Yogyakarta, because of its role in the independence struggle, also has autonomous status as DI Yogyakarta under a Governor (its former traditional ruler or Sultan). In 1979, all traditional rural decision makers (leaders-of-thought) and regional leaders, such as the rural "Negari" of West Sumatra or the Sultan of Yogyakarta, were divested of their authority and formal roles. The Executive Branch (prior to 1999) is thus characterized constitutionally by a hierarchical system under the direct authority and control of the President with all that this dependence entails, including its evolution into an authoritarian regime with the formal trappings of democracy[5] under the New Order regime of President Soeharto.

The President is assisted by a Cabinet organized into three groups: a "security" group, a "social welfare" group and a group for the economic sectors (agriculture, forestry, industry, public works, etc.) and finance. Each ministerial group is headed by a Coordinating Minister (*Menko*). The Coordinating Minister for Economy, Finance and Industry (*Menko Ekuin*) is the most powerful as he has Cabinet guidance authority over, inter alia, the Minister of Public Works (MPW) and Minister of Finance.

National policy and regulation. National policy for subsector and special affairs, such as environmental protection and national development planning, are organized under State Ministries headed by less-powerful State Ministers. The personnel administration management of the civil service structure is regulated by the State Ministry for Control of the Government Apparatus (*Menpan*). State ministries have no "line" implementation responsibilities, but may carry out their mandates through authorized Boards under a Chairman appointed by a Minister or State Minister. For the water sector, the most important Boards are the National Planning and Development Board (*Bappenas*) chaired by the Minister of Planning (until 1999) and the Environmental Management Board under the State Ministry for Environment (KLH) chaired by the State Minister's Secretary (*Sesmen*). Up to 2000, Bappenas would prepare the sector ministry agency content and overall government budget parameters of a Five-Year (rolling) Plan (*Repelita*) to guide the programming of the Executive Branch's activities in line with the strategic policy guidelines of the State Policy Guidelines (GBHN). Thus, any change of national or sector policy giving rise to new laws and regulations should fall under an MPR umbrella to be constitutionally effective and operational; this was a major consideration in formulating the WATSAL reforms. It also explains why the intergovernmental coordination of the WATSAL reform process is guided and coordinated by Bappenas whereas the substance is determined by a consensus among line ministries, state ministries, key government agencies, such as the Indonesian Academy of Sciences (LIPI),[6] and some NGOs.

The legislative system. The "Judicial Branch" of the government that interprets and enforces the legal code is presided over by a Supreme Court that, together with lower courts, is nominally

[5]Leo Suryadinarta: *Elections and politics in Indonesia*: Institute of Southeast Asian Studies, Singapore, 2002.

[6]LIPI is active, inter alia, in water resources technology research; also did general nonscientific government studies such as making recommendations on a national electoral system in 1996. Apparently, its mandate includes politico-economic sciences. LIPI has a representative on the WATSAL Task Force for formulating the water-sector reforms.

independent albeit the fact that the President appoints all judges upon the recommendation of the prevailing Administration. The "Legislative Branch" or Parliament consists of two houses: the "People's Consultative Assembly" (MPR) and a "People's Representatives Council" (DPR). Each province has a regional parliament or "Regional People's Representative Council" (DPRD I) while districts have legislative assemblies or a "District People's Representatives Council" (DPRD II) for legislating district laws and regulations. The MPR is constitutionally the higher of the two national councils and is Indonesia's supreme constitutional sovereign body that drafts the GBHN, amends the Constitution and elects the President after a national election. It meets once a year to prepare MPR decrees (TAP), which set the national policy aspirations and politico-economic principles that guide the DPR and the GBHN. It has 700 members of whom 500 are DPR members and 200 are non-DPR members not elected to the MPR through national elections. Of these 200 seats, 135 are nominated by DPRD I. It should be noted that DPRD IIs are not directly represented in the MPR albeit the fact that they are elected: if they did, the MPR would have 1,053 members.

From among the winning parties in a national election, each DPRD I would select 5 members to represent them in the MPR (some of whom would be from the military). Thus the military would have an additional 12 to 27 seats in the MPR as DPRD I representatives. The remaining 65 MPR delegates are selected and appointed by the General Election Commission from constitutionally recognized special interest groups[7] (NGOs and other nonpolitical organizations). Their composition is: 20 religious groups, 5 veterans' (retired military) organizations, 9 economic organizations, 5 women's groups, 5 ethnic minority groups, 2 handicapped groups, 9 academics' and intellectuals' organizations, 5 civil servants' organizations and 5 youth/students' organizations. Thus, the principle of stakeholder[8] involvement and empowerment is recognized under the Constitution, the highest ideological and legal framework of the Indonesian State. The issue for this paper is "Under what circumstances of political and bureaucratic will could this principle of good practice[9] be legally adopted and applied in the water sector?"

The DPR, headed by a Speaker, with 500 contested seats has 38 seats reserved for the armed forces. The DPR meets regularly to draft and issue laws that are enacted upon signature by the President. As there were 27 provinces (including DKI Jakarta) prior to 2000, there were 27 provincial legislative assemblies or DPRD Is. Each DPRD had between 50 and 100 members, of whom 90 percent were elected during the national elections, while 10 percent would be appointed from the armed forces or the military. National elections are held every 4 years. Prior to 1971, the MPR and DPR were based on territorial representation through district elections; this was replaced by a system of district and proportional representation ("one man, one vote") for the MPR, DPR and DPRD Is.

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[7]Interest groups are defined as people formally organized—under a recognized body with formal statutes or bylaws—for collective action to promote legitimate public, private, community, social, environmental, religious and professional goals.

[8]Stakeholders are individuals and interest groups affected, positively or negatively, by a particular government legal, policy or administrative action, or who can affect the outcome of a proposed action, reform or institutional change.

[9]"People support those things they are a party to and help create."

The Regional Government System

The electoral system and accommodation of regional diversity. Under the electoral system of Soeharto's New Order, the electoral law stipulated that there should be a balance in the representation between Java and the Outer Islands. The law stipulated that every district would have at least one representative in Parliament, guaranteeing the Outer Islands a Member of Parliament for each district. Although this system was designed to balance Javanese control over non-Javanese, in practice, it did not function as a Parliament under the New Order as it was a "rubber stamp of the government." If elections were strictly by district representation, there would be 238 elected DPR members; instead there are 465. This system did not change significantly for the 1999 election under President Habibie's Reform Cabinet. The contest for seats is organized along party lines whose dominant ideologies follow a historical division between the secular and Islamic views of the State and its political economy as well as nationalism. Political orientation obviously plays a role in the selection of ministers and parliaments as in any country and must be expected to influence the crafting of new sector institutions. The considerations of the ecological, cultural, ethnic and politico-economic diversity of Java and Outer Islands' dichotomy, as well as the Islamic view of natural resources such as water and payment for its use (especially for irrigation), are major considerations in the formulation of acceptable policies for the water sector in Indonesia.

The deconcentrated multilevel public administration system. The hierarchy of dependence is particularly pronounced in the deconcentrated public administration of lower levels of government under Soeharto's New Order. The structure of the provincial administration's sector agencies (*dinas*) conforms more or less exactly to the ministerial line agency or departmental structure. For example, if under MPW, there are DGs for water resources development (WRD), roads and urban infrastructure, the dinas WRD structure will be the same; furthermore, its territorial deployment will be zonal using branch (*cabang*) units for one or two district operations and subbranches (*ranting*) for one or two subdisrtricts (*kecamatan*). In smaller provinces, such as DI Yogyakarta, the dinas will be a dinas for public works with a sub-dinas for water resources, roads and bridges and urban infrastructure, respectively. The internal agency organizational structure (*organogram*) of national ministries is regulated by Menpan. This mandate covers administration, audit and budget control units, numbers of DGs, their functional directorates and their regular civil-service staffing levels. Each Director General approves the internal organization of the Directorate's specialized subdirectorates subject to the approval of the Minister. However, subject to the general framework for the provincial civil service regulated by Menpan, the Ministry of Home Affairs (MoHA) approves the organizational structure of a provincial government proposed by a Governor, as well as the structure and management echelon-level of provincial dinas unit heads.

The Legal System

The national legal framework. Being a former Dutch colony, Indonesia's formal legal system is based on Dutch legal concepts and frameworks. Many current legal and administrative concepts are modified laws, regulations, etc., inherited from the colonial era. This includes the following requirements: a) preparation of a Law must include preparation of an "Academic Paper" outlining the arguments for its provisions and principles; and b) once enacted, it is not sanctioned to pass

amendments of specific Articles or Clauses at a later date as in the Anglo-Saxon legal tradition– instead the whole law must be replaced in full with a new number, name, etc. The 1945 Constitution establishes the basic principles of the Indonesian State and Government System upon which all subsequent laws, regulations and administrative orders must based. Indonesian laws and regulations consist of two parts: a) the legal provisions; and b) a Clarification (*penjelasan*) of the intent of each clause that may be subject to interpretation, especially where policy intent is explained in detail and language not suited to the formal legal language of a law or regulation. This reduces litigatory tendencies and need for judicial interpretation in the legal system. However, in practice, discretion may be exercised by the Bureau of Legal and Legislative Affairs of the Cabinet Office even if it contradicts the opinion of the Ministry of Justice.

In the Indonesian legal tradition Laws are general and focus on legalization of key politico-economic and social principles. Government regulations elaborate the implementation of these principles according a Presidential Administration's policy approach to implementation of the principles. The Executive Branch's implementation of a government regulation is carried out by presidential and ministerial decrees and instructions, respectively, while sector ministers may issue Ministerial Regulations to elaborate implementation of a government regulation in greater detail. Thus, while laws must be passed by a majority of the DPR, government regulations are only submitted to the DPR for information. Both instruments must however be signed by the President while Ministerial Regulations require the clearance of the President. This procedure has significant bearing on the WATSAL reform process.

The hierarchical order of legal instruments prior to 2000 is as follows:

Central Government

1. 1945 Constitution (Undang-Undang Dasar).
2. MPR Decision/Decree (TAP MPR).
3. Law (Undang-Undang or UU).
4. Government Regulation (PP).
5. Presidential Decree/Instruction (KepPres, InPres).
6. Ministerial Regulation/Decree/Instruction (PerMen, KepMen, InMen) or if a decree is issued jointly by two or more ministers, KepMen Bersama.
7. Senior Official's (i.e., DG) Administrative Order (SK), or if issued jointly by two DGs, SK Bersama.
8. Depending on whether a ministerial or line ministry administrative order of technical or procedural nature is involved, a technical guideline (*Juknis*) or implementation guideline (*Juklak*) would normally be issued to provide detailed instruction on how the provisions of the decree or order are to be carried out.
9. A guideline or model legislation (*pedoman*) is needed for provincial laws or regulations required to implement national legislation in each province.

Regional and District Government

1. Provincial Law or Regulation (Perda Dati I).
2. Governor's Decree (Kep. Gubernur).
3. District Law or Regulation (Perda Dati II).
4. District Regent's Decree (Kep. Bupati).
5. Administrative Order of a Dinas Head.
6. Depending on whether a regional government administrative order of a technical or procedural nature is involved, a technical or implementation guideline would be issued by the head of a dinas to provide detailed instructions on how the provisions of the decree or order are to be carried out. Such guidelines must contain: a) a description, b) a flow chart of the process and activities, c) a matrix of institutions involved, and d) the model forms to be used.

The above ranking of legal and administrative instruments is an essential consideration in an Indonesian institutional reform program wherein appropriate laws, regulations and administrative orders are to be changed in order to bring about implementable and sustainable sector reforms. It also determines which legal instrument is to be selected as the appropriate monitorable indicator for meaningful specific legal, policy or administrative reform that would change a particular institution, which has contributed to unsatisfactory sector performance.

Regional legislation. A regional law or regulation (*Perda*) will be enacted by a province or district: a) as a follow-up of a national UU or PP in order to apply its provisions regionally or locally; b) to regulate people for a financial imposition under regional or district revenue authority (tax, fee or charge); c) to impose a behavioral limitation (i.e., prohibition to build a structure within a certain distance from a road, river, etc.; and d) to impose an obligation (every building should be completed with licensing, wells must be licensed, etc.). The legal and administrative instruments of all lower-level government bodies and officials must not contradict the policy or provisions of a higher-level law, regulation, decree or instruction. If there is inconsistency, it can be revoked by the higher government or administrative level and is not legally binding. Accordingly, in a proposed reform program that depends on lower-level legislation, it is important to ensure that the national sector legislation meets the reform objective. In the Indonesian context prior to 1999, there were many reasonable sector laws and regulations that have been issued—such as a government regulation pertaining to cost recovery in the water sector under the existing water law—but there was a lack of political or bureaucratic will to implement or enforce them because of politico-economic transaction costs and special interests. Thus, a higher-level decision not to sanction issue of a Juklak or Juknis meant that the sector administration could not actually implement a formal legal provision until the procedures were codified. Thus, though good "rules" existed, the actual "rule-in-use" falls short of the "rule" itself and sector performance suffered.

Impact of Administrative and Fiscal Decentralization Laws on Public Administration

Decentralized Government

Reform of the historic constitutional public-administration principles. Late in 1999, after the fall of President Soeharto's Administration in May 1998, the Parliament and a "Reform Cabinet" under President Habibie—the former Vice-President who constitutionally became President—enacted and issued a "Regional Government" Law (UU 22/99) and a "Fiscal Balance between the Central Government and the Regions" Law (UU 25/99). This constitutional and politico-economic "earthquake" instituted a government and public administration system based on new principles[10] of democratization, government transparency, community empowerment and "administrative decentralization" with a major reduction of both functional and fiscal[11] "deconcentration." Under these principles, all central government functions and responsibilities—except defense, foreign relations, judiciary, national finance and responsibility for national statistics—were devolved to provincial and local (district/urban) governments. Thus, with the exception of the abovementioned functions for the national government, which will continue to be administered and financed using the "deconcentration" and "task assistance" (*medebewind*) principles, all government tasks and functions, including their financing, are given to the district and urban governments (*kabupaten* and *kotamadya*), except those that are of a cross-administrative boundary (*lintas batas*) nature (e.g., national roads, large canals and river-basin management). This sea change in constitutional, administrative and fiscal rules-in-use, although anticipated in 1999 during the formulation of the WATSAL reform program, had a profound influence on both the substance and process of sector reforms.

The conundrum of a regional/provincial authority and task responsibilities. Cross-boundary infrastructure and management functions/activities may reside with the provincial regional

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[10]The Preamble to the Regional Government Law UU 22/99 states: "...

a) Whereas the governance system of the Unitary State of the Republic of Indonesia by virtue of the 1945 Constitution provides freedom to Regions to organize Regional Autonomy;

b) Whereas in the organization of Regional Autonomy, it is deemed necessary to emphasize more on the principles of democracy, community participation, equitable distribution and justice, as well as to take into account the Regions' potentials and diversity;

c) Whereas...it is deemed necessary to organize the Regional Autonomy by granting broad, real and accountable authorities to regional governments proportionately, which is realized by arrangement, division and utilization of national resources and balanced finance of the Central and Regional Government in accordance with the principles of democracy, community participation, equitable distribution and justice, as well as Regions' potentials and diversity, which are implemented in the context of the Unitary State of the Republic of Indonesia;..."

[11]The Preamble to the Fiscal Equalization Law UU 22/99 states: "...

b) Whereas the regional development as integral parts of the national development shall be implemented through regional autonomy and the arrangement of national resources, providing opportunities for the increase of democracy and the efficient and effective regional performance in the implementation of governance, the public services, and the development to raise the public's prosperity towards an honest public free from corruption, collusion and nepotism, for which the participation of the public and the openness and the accountability of the public are required;

c) Whereas to support the implementation of the regional autonomy through the availability of financing sources pursuant to decentralization, deconcentration, and the task of assistance, a fiscal balance needs to be arranged between the Central Government and the Regions in the form of a financial system based on the clear division of authority, tasks, and accountability between levels of government..."

government level and, if of a trans-province nature, may be the responsibility of the national government. Law UU 22/99 states that: a) either the local/district or regional governments concerned may form a joint commission to deal with the function/responsibility; or b) if they do not have the technical and/or financial capacity for the responsibility, may refer the responsibility to the next higher (spatial) level of government. The lack of specificity in Government Regulation PP 25/00 regulating UU 22/99's provisions regarding the limited nature of provincial responsibilities as being only those of a regional cross-boundary type—and the reduced fiscal transfer or national revenue-sharing for provincial activities, albeit that they may have a larger original, regional and locally generated revenue—creates major issues and concerns for both provincial legislatures and provincial government sector agencies (dinas) and provincial governments that are still being resolved. Each province is trying to resolve this with its constituent district governments during the current transition period. Some districts are enthused with their new powers and fiscal resources, while others realize their technical and financial capacity limitations at this time and prefer to leave some tasks with the provincial administration. Some districts, as in West Java for example, are not doing so preferring to discharge such functions through the cooperative and collaborative option provided by UU 22/99. The issues and uncertainties about the provincial government's uncertain regional role, tasks, functions and authority have major implications for WATSAL. It raises substantive constitutional issues, organizational and operational policy questions for the water sector and affects its ongoing institutional reform process.

Democratically elected provincial and district legislative assemblies were given legislative control over the constitutionally authorized functional mandates, fiscal transfers and increased revenue-generation powers directly devolved to the regional- and local-government levels. They also have programming and budgeting control over the expenditures of their respective government administrations, which are now accountable to these legislatures and their electoral constituencies for each sector's management, and their overall performance. The issue of UU 22/99 has also changed the significance of the legal instrument hierarchy by virtue of the decentralization concept.

The Decentralized Financial System

Implications of decentralized revenue-sharing mechanisms are that the regional- and local-government revenue sources will be greatly increased and widened in scope concomitant with their increased tasks and responsibilities.[12] This includes new sources and types of locally generated revenue, including taxes, fees, remittances (*retribusi*), income from regionally owned public enterprises,[13] processing returns from processing of regional wealth (e.g., mining and forestry), general allocation block grant or General Allocation Fund (Dana Allokasi Umum or DAU), special purpose block grants or Special Allocation Grant (Dana Allokasi Khusus or DAK) for special

[12]The preamble to the Clarification of UU 25/99 states: "Regional shares of the Land and Building Tax revenues, Customs on the Obtaining Rights of Land and Building and revenues from natural resources are sources of revenue that are basically taken into consideration in the region's production potential. The general allocated funds shall be allocated with the objective of equality by considering the region's potential, area, the geographical conditions, the population and the regional people's level of income, *in order that the differences between the more-advanced regions and the less-advanced ones may be decreased.* The purpose of the special allocated funds is to assist in financing regional special requirements. Furthermore, to cope with emergency conditions such as a natural disaster, an Emergency Fund may be allocated to the region. Therefore, this Law, besides providing a basis for regulating financial distribution between the central government and regions, also provides a basis for fiscal balance between regions..."

[13]Two enterprises.

regional needs determined by "national priorities,"[14] emergency grants and regional loans (including domestic loans under certain conditions).

The total national DAU allocation is set under UU 25/99 at 25 percent of annual Domestic Revenue as set by the State Budget of which 90 percent will be shared with district governments while only 10 percent will be shared among the provinces. The national revenue-sharing with regional and local governments (districts, towns and villages) is according to an "equalization" formula. The formula is based on population, regional- and local-income levels, the regional share in generation of income from natural resources (economic potential), special autonomous regional needs and empirical, statistical and econometric variables for which a special statistical system is to be established and appropriate edicts are to be issued. Many parameters of the formula are somewhat subjective and subject to politico-economic interpretation and are still to be tested in practice. The revenue-sharing mechanism will be based on a block grant system computed according to the said formula. A great deal of uncertainty however, exists as to whether the provinces and districts will have the financial wherewithal to implement and be accountable for their additional authority and tasks.

[14]The Clarification of UU 25/99 states for Clause 8.2.a: "The requirements that cannot be estimated in general by formula, are requirements with specific characteristics that are dissimilar to the requirements of other regions, for instance the requirements in transmigration areas, and the requirements of several types of investments/new facilities, construction of roads in isolated areas, primary irrigation channels and, in the BWRM program, primary drainage channels.

Prevailing Water-Sector Institutions in 1999

Water Resources Legal Framework

Basic Water Resources Development Law 11/74

Law 11/74 provisions. Management of water resources and the irrigation sector is based on Law No. 11 of 1974 on "Water Resources Development" (UU 11/74). This law focuses on water resources development[15] and less on water resources management[16] and water resources regulation.[17] It provides that water resources plans should conform to the framework of national development and emphasizes project planning. Water and water resources are controlled by the State albeit that control may be delegated to national agencies at the provincial level or to public corporations. National control includes: a) management and development of water and water resources; b) authorization or licensing of water uses on the basis of general and project plans; c) regulation, authorization or licensing of water utilization, purpose of use and supply of water; d) regulation, authorization or licensing of water and water resource exploitation; and e) determination and regulation of legal acts and relationships among individuals and/or corporations in respect of water and water resources uses. The government is to formulate specific policies and programs regarding data collection, project planning, water use, pollution control, licensing and enforcement to meet the law's objectives.

Direct beneficiaries are to participate in the operation and maintenance (O&M) with the central government or provincial governments assuming O&M responsibility for works of general benefit (e.g., flood control). UU 11/74 places the water resources management and intergovernmental coordination responsibility under MPW, but groundwater data collection and evaluation are assigned to the Directorate of Environmental Geology (DEG) of the Ministry of Mines and Energy (MoME). DEG has review and approval powers over all provincial licensing of groundwater development except for domestic use that is exempt from controls. The law allows for delegation of government authority to the establishment of river basin corporations as State-Owned Enterprises (SOEs). To date, the Jatiluhur Authority (POJ) in the Citarum Basin of West Java and the Brantas Corporation (PJT Brantas) in the Brantas basin of East Java were established in 1990. However, UU 11/74 is based on the principle of central government hegemony using deconcentration and coadministration principles current in 1974. It consequently needs to be amended to cater to new paradigms such

[15]Water Resources Development under UU 11/74 is defined as: "the development of water and water resources for the utilization thereof through project plans, design and technical specifications made in accordance with the relevant general development plan and intended to optimize benefits and to satisfy the vital needs of the People..."

[16]Water Resources Management under UU 11/74 is defined as: "the control and administration of water and water resources, either in their natural state or as exploited by man and including the natural organic riches contained therein..."

[17]Water Resources regulation under UU 11/74 is defined as: "all legal provisions governing the right to use, the control, management, utilization, processing and policing of water and water resources, including the natural organic riches contained therein for the optimization of benefits with a view to satisfying the vital needs of the people ..."

as: a) regional autonomy, decentralization and state revenue-sharing as proposed in pending national legislation; b) an intergovernmental coordination framework headed by a national apex body; c) provision for stakeholder involvement in sector policy formulation institutions; and d) beneficiary empowerment in irrigation management.

Linkage to other laws. UU 11/74 does not stand on its own so that overall water resources management is also dependent on other legislation. This gives rise to disaggregation of functional responsibilities among several ministries. Under the Forestry Law No. 5 of 1967 and its PP 33/70, all water resources activities in forest conservation areas require a license from the Ministry of Forestry: this leads to conflicts of interest with MPW, which manages water resources in general. Similarly, sand quarrying and other mining activities in rivers that lead to their deterioration are not easily regulated because local governments derive revenue from mining activities.[18] Conjunctive use of groundwater and aquifers is not properly managed as MoME is mainly interested in its abstraction licensing function. There are also conflicts regarding the right to use water which stem from Law No. 5 of 1960 regarding Agrarian Rules. Fees for water abstraction are also dependent on legislation for regional and local revenue. For example, provincial water abstraction fees were abolished and given to kabupaten by Law 18 of 1997 regarding Regional Taxation: thus, although provinces were responsible for O&M of water infrastructure, they were deprived of revenue which could be earmarked for this purpose.

Key Government Regulations under UU 11/74

Under UU 11/74, there are 9 Government Regulations (PP). Of these, the most important are PP 22/82 regarding "Water Management," PP 35/91 regarding "rivers," PP 23/82 regarding "Irrigation" and PP 6/81 regarding "Contribution for the Cost of Operation and Maintenance of Water Resources Development Infrastructure" (see list in annex VII).

Government Regulation No. 22 of 1982 regarding "water management" (PP 22/82). The 1982 Government Regulation No. 22 on "Water Management" (PP 22/82) sets up the basis for river-basin management. The management concept is based on three principles: water conservation, development and utilization are to be based on hydrographic boundaries (i.e., basins); management authority may be delegated to provincial governments and basin corporations; and a requirement for a comprehensive water resources plan for each basin, which is to be incorporated in a National Water Resources Plan as part of the National Economic Development Plan. PP 22/82 determines the priorities and rights to use water for specified uses, while water allocation is based on recommendations to a Governor by a provincial and/or basin water resources regulation committee. Water rights are a water appropriation right, i.e., the right to obtain and use water for a certain use. Every payment for using water is not assumed to be a water resource opportunity cost, but a compensation for the cost of related management and development services.

The Minister responsible for water resources development coordinates all water resources management even if it is not directly under his responsibility (e.g., groundwater development). Water

[18]Mining licenses are issued by the local government that benefits from licensing fees under Law No. 11 of 1967 on "Basic Mining." Thus the Minister of Public Works Decree No. 458 of 1986 and DGWRD Decree No. 176 of 1987 to protect water resources from the toxic wastes of mining have no effect because of local government interest in mining fees.

resources regulation includes: a) determination of water resources utilization priority plans; b) determination of the sequence of water and water utilization priorities in protection, development and utilization planning of water resources; c) regulation of water use or water resources utilization; d) regulation of disposal methods for wastewater and other wastes; e) regulation of construction of hydraulic structures; and g) general regulation of potential problems. For this, the Minister is obliged to: a) collect data on quantity and quality of water in the form of a water resources inventory; b) collect data on water demand and water resources balance; c) undertake special studies and plans on development and utilization of water resources; d) formulate and establish policies of water resources development planning; e) advise and provide technical services to other national and provincial agencies on water utilization planning; f) regulate the method and conditions for registering water resources; regulate methods and conditions of disposal of wastewater and other wastes; and e) regulate methods of supervision and control of policy implementation.

Water utilization is divided into two categories: "without license" and "with license." The "without license" category covers domestic, religious and livestock needs; the "with license" category covers all commercial uses, including farming, power generation, industry, mining, water traffic, recreation, tourism, health and urban supply. Permits are not required for agricultural and other community users in rural areas. For irrigation schemes, the official approvals granted during the scheme's planning stage form adequate authorization for water use. Cropping patterns and calendars approved by a Regent (Bupati) are also considered an authorization albeit for a limited duration. Water uses other than the above require a license which, sometimes, cause conflicts with other water users under the present licensing system.

The Minister may declare the size of conservancy areas to maintain water resources functions subject to the agreement of other concerned ministers. Measures to protect the conservancy area are the responsibility of a Governor. In general, the community may be asked to participate in flood and pollution control as well as in the protection of hydraulic structures. O&M of hydraulic structures—including funding thereof—is the responsibility of the national government or provincial governments depending under whose jurisdiction the structures fall. In principle, beneficiaries can be asked to participate in O&M.

Government Regulation No. 35 of 1991 on "rivers." PP 35/91 declared that rivers have multipurpose uses and delegated responsibility for river development and management to either the central or the provincial government in accordance with a classification of their economic importance. PP 35/91 does not, however, mention coordination with agencies responsible for managing related upper watersheds, groundwater or coastal estuaries in the interests of ensuring integrated river basin and aquifer management objectives.

Government Regulation No. 23 of 1982 regarding irrigation (PP 23/82). PP 27/91 regulates the development of swamp areas and the construction of water-control schemes. PP 23/82 delegates to a provincial government (or to a corporation such as POJ), management and regulation of water supply for irrigation networks up to the tertiary level. This includes network construction unless such assistance is requested from the national government through the Ministry of Home Affairs (MoHA). PP 14/87 provides for devolution of irrigation O&M responsibility to the provinces. Tertiary-level irrigation is the responsibility of the farming community. Coordination among schemes is arranged through the Provincial and District Irrigation Committees chaired by the Governor and District Regents, respectively, with the Chief of the Provincial Water Resources Service (Dinas Pengairan) as their Secretary. The members of these committees are officers of other technical

agencies relevant to irrigation. These committees assist the Governor in the supply, distribution and allocation of irrigation water for crops and other purposes.

PP 23/82 only recommends that tertiary-level irrigation be undertaken by Water User Associations (WUAs) organized at the village level. Thus, farmer representatives are not included as members of the Provincial and District Irrigation Committees even if they are organized into WUAs. The 1984 Presidential Instruction No. 2 on Management of Farmer Water User Associations prescribes ministerial (MPW, MOHA and Ministry of Agriculture) responsibilities for establishing WUAs. Once established, the WUAs are to assume full responsibility for O&M of tertiary canal networks. The government, through the Ministry of Home Affairs Regulation No. 12 of 1992 tried to improve WUA functionality by giving a WUA the right to develop a corporate organization authorized to undertake contracts for system improvement. This MOHA Decision also gives WUAs an opportunity to become corporate entities: i.e., to open a bank account, receive government assets and obtain bank credit. However, incorporation of a WUA is a complicated process requiring ratification by the district government and is not explicitly provided for in enabling legislation.

Provincial governments are responsible for registering and maintaining an inventory of all irrigated areas and informing the Minister responsible for water resources of its status once every 4 years. An irrigation network may supply water for all rural uses (including fisheries if a water surplus exists after crop needs are met) according to a provincial irrigation plan approved by the Minister. However, the Governor determines which tertiary blocks receive full or partial supply depending on the season, etc. Closure of canals for repairs requires 2 weeks' notice to farmers and the canals may also be temporarily halted if farmers do not maintain their tertiary and quaternary networks. Food crops are given supply priority; however, cultivation of industrial crops requires a license.

Under PP 23/82, O&M of irrigation networks up to 50 m beyond a tertiary outlet are designated as a provincial responsibility albeit the fact that the national government may provide assistance in accordance with procedures established by the Minister. These provisions include financing of O&M under government responsibility. However, under certain conditions, a provincial government may assist a community in the O&M of tertiary networks in accordance with procedures established by a Governor.

Government Regulation No. 6 of 1981 regarding "contribution for the cost of operation and maintenance of water resources development infrastructure" (PP 6/81). PP 6/81 requires project beneficiaries to bear water-development costs. It provides guidelines for creating public corporations—such as municipal water-supply utilities and river-basin corporations—to manage water infrastructure and recover their O&M costs through water use and pollution charges. These charges are to be set by MoHA reflecting amortization and O&M costs. PP 6/81 also includes policy principles such as water-abstraction licensing, beneficiary participation in O&M and its financing, river basin management and water-service fees. A clear funding policy is thus evident in existing legislation, i.e., that rural and urban beneficiaries should pay for water services. PP 6/81 introduces the O&M fee consisting of a water-use fee and a wastewater discharge fee. This fee is directly related to infrastructural costs, though there is no explanation as to what infrastructure would be applied for water-quality management. Several means already exist for charging water consumers, including those using groundwater, for the costs of cleaning up the wastewater they generate, for surcharges on PDAM tariffs, for environmental levies on the property tax or on business or development taxes, etc. The introduction of such charges, however, requires political will and leadership, which have been lacking in most regional and local governments in the past.

Government Regulations 5/90 and 42/90 establishing the Brantas River Basin Corporation (PJT Brantas) and the Jatiluhur Authority (POJ). Under Article 4 of UU 11/74, PPs were issued to establish PJT Brantas and POJ in 1990 as national state-owned enterprises (BUMN). Although issued in the same year, the approach to each was different: PJT Brantas was established as a concession for bulk water supply and organization for subsidized O&M of key infrastructure on the Brantas river; POJ was established as an Authority that also was responsible for about 240,000 hectares of irrigation networks down to the tertiary outlets.

Government Regulation No. 20 of 1990 regarding water pollution control. Each ministry is responsible for environmental affairs within its functional mandate, while the Ministry of Population and Environment (KLH) has the coordinating role and delegates its executive powers to the provincial governors. Under PP 20/90, river-water qualities are classified according to use and effluent-quality standards, and wastewater disposal licenses are determined by the State Minister of Population and Environment (KLH). He is also to prepare a policy to monitor and control groundwater pollution and to collect data and information on environmental impact. All these functions are decentralized to provinces under his overall guidance. PP 20/90 clarifies provincial authority to collect data, monitor, license, investigate and assess charges relating to water-pollution control and set standards for each major water use. Presidential Decree No. 23 of 1990 establishes the Environmental Impact Control Agency (BAPEDAL) reporting directly to the President under KLH guidance. BAPEDAL is to control environmental impacts through damage prevention, impact management and mitigation measures under existing regulations; it is also to cooperate with other ministries on technical matters and assist local governments in meeting their environmental responsibilities. Environmental provisions have been considerably strengthened by the passage of Law No. 23 of 1997 (UU 23/97) regarding "Environmental Management." This law serves as a foundation for evaluating and adapting all environmental laws and regulations pertaining to environmental impacts of irrigation, mining, energy, forestry, resource conservation, industry, human settlement, land use and similar activities.

Strangely enough, in parallel to PP 20/90 and in the same year, MPW issued Minister of Public Works regulation 45 of 1990 Concerning Water Quality Control of Water Resources that is similar to, but conflicts in many respects with, PP 20/90. This ministerial regulation provides for water-quality control activities by provincial water resources development departments (*dinas pengairan*) under the budget of MPW. In the case of East Java, discharge conditions are attached to abstraction licenses. Water-pollution control functions include classification of river reaches, monitoring and data collection, issuing regulations on effluent discharges (e.g., specification of discharge rate, composition, etc.), and carrying out water-quality improvement works.

Presidential and ministerial decrees and instructions. Under the framework of the nine PPs, there are: 1 Presidential Decree (*Keppres*), 2 Presidential Instructions (*Inpres*), 14 Ministerial Regulations (*Permen*), 9 Ministerial Decrees (*Kepmen*), 3 Joint Ministerial Decrees and 5 DGWRD Decrees (see list in Annex VII). A review of the list will give one an idea of how such regulations and decrees are needed in the Indonesian legal system for implementation of the PPs. MPWR No. 39 of 1989 regarding "division of River Basins" divides Indonesia into 90 river basin territories (SWS) which consist, in many cases, of an amalgamation of watersheds based on their level of development, administrative boundaries, etc. MPWR No. 48 of 1990 regarding "Management of Water Resources in the River Basin" has allocated the 90 SWS as follows: a) 73 SWS located within provincial

boundaries are managed by the provinces under the principle of coadministration (medebewind); b) 15 SWS are managed by MPW as they are of a cross-provincial nature; and c) 2 basins, Citarum and Brantas are managed by POJ and PJT Brantas, respectively. In addition to the MPW legislative instruments, it is important to note the Minister of Home Affairs Decree No. 176 of 1996 for establishment of provincial basin water resources management units (Balai PSDA) as technical implementation units of a Provincial Water Resources Development Service. Balai PSDA have responsibilities for: a) irrigation for schemes crossing district boundaries, b) water allocation for various needs, c) rivers, lakes, dams, d) flood control and drought mitigation, e) swamp scheme O&M, f) water pollution control monitoring, and g) coastal protection, estuaries and delta management.

Keppres No. 18 of 1994 on Organization Structure of the Ministries appointed the Minister of Public Works in charge of, and responsible for, water-resources management and administration assisted by the DG of DGWRD in carrying out coordination activities. Other regulations on coordination between ministries are: a) the Joint Ministerial Decision of the Minister of Home Affairs, the Minister of Forestry and Minister of Public Works No. 19/1984, 059/KPTS-II1984, 124/KPTS/ 1984 on Land Conservation for Priority Catchment Areas; b) Joint Ministerial Instruction of the Minister of Public Works and the Minister of Mining and Energy No. 04/KPTS/1991.0076K/ 101m.PE/1991 on Water or Water Resources Utilization for Mining Undertakings including Oil, Gas and Geothermal Undertakings; and c) Joint Ministerial Instruction of the DG of DGWRD, DG Budget of MoF, DG of Government Administration and Autonomy, Director General of Oil and Geothermal No. KEP-4802/M/1991, 974-718, 107/K/101DDJM /91.13/KPTS/A/1991 on Water Fee Collection Procedures for Regional Autonomy, Oil and Geothermal Undertakings.

Sector Administrative Framework and Organizations

Sector mandates and organizations. Water resources have played a major role in the development of Indonesia. During the first 25 years of development (PJP I: 1969-1994), water-resources policies were directed at supporting the development of different sectors, with the primary emphasis on increasing rice production by expanding irrigation. However, physical and financial sustainability of irrigation investment was not emphasized. Indonesia started its second 25 years of development (PJP II: 1994-2019) in April 1994 which, inter alia, emphasizes the development of comprehensive, integrated and sustainable strategies for water-resources development and management. Immediate spin-offs of this strategy were: a) the elevation of water resources to the status of a separate sector, b) the establishment of a Bureau of Water Resources and Irrigation in the National Planning Agency (BAPPENAS), and c) a major reorganization in 1995 of the Directorate General of Water Resources Development (DGWRD) in the Ministry of Public Works (MPW).

For the water sector, the most important ministries are MPW and the Ministry of Finance (MoF) as the former is responsible for most water resources and irrigation matters under its mandate, while MoF's Director of Budget determines the ultimate MPW annual budget and operational fund release. The Ministry of Home Affairs (MoHA) falls under Menko Ekuin and, inter alia, for regulating provincial and district government structure, finances, revenues, fiscal transfers from the national government and, regional/local development. As such, it has a major influence on the organization of the Provincial Water Resources Services[19] and, on the central funding they receive for their O&M and other water-related activities. The Ministry of Mines and Energy (MMoE) also falls under Menko Ekuin: this is relevant for the water sector as MMoE is legally responsible for:

groundwater abstraction licensing (an important groundwater regulatory tool), mining regulation (a major cause of water pollution), and oversight of the public and private hydropower subsector (important for coordination in river regulation and BWRM). The Ministry of Agriculture and Ministry of Forestry and Plantations—both of some importance to the water resources and irrigation subsectors—both fall under the guidance of Menko Ekuin. Nine national line ministries and state ministries as well as several government agencies are related to the water sector alone, thus interministerial and intergovernmental coordination is operationally important and makes sector reform a complex institutional endeavor.

Ten ministries and agencies are allocated various aspects of water-resources management and activities. Their responsibilities, activities and interactions are shown in annex VII. The Ministry of Home Affairs (MoHA) provides guidance for regional development programs and governance of village institutions, including WUAs. Its Directorate General of Regional Development (*Bangda*) coordinates programs involving financial transfers (*Inpres*) to provincial and local governments, including irrigation O&M funding. The Ministry of Environment (MoE) is responsible for the formulation and coordination of environmental policies. However, implementation and management of pollution-control measures, regulations and water quality are done through its Environmental Protection Agency (*Bappedal*). The Ministry of Agriculture (MoA) liaises with MPW for water supply for agriculture and has programs for tertiary-level irrigation. Integrated watershed management is done through the National Soil Conservation Program that involves the Ministry of Forestry, MPW, MoA, MoHA, MoE and Bappenas.

Directorate General of Water Resources Development. Within the MPW, along with irrigation development, DGWRD was assigned responsibilities for water resources development[20] and management, including providing support in these areas to the nation's provinces and river-basin authorities. In 1996/97, DGWRD had some 6,700 permanent civil servants and about 9,000 temporary professional and support staff, of whom about 90 percent are located in projects or deputed to provincial units. While major construction and consultancy projects are under national DGWRD control, most water resources and irrigation management operations are devolved to the provincial government apparatus and executed by the Provincial Water Resources Development Service (*Dinas Pengairan*). The various provincial Dinas employ about 28,000 staff, with a range of 500 to 9,000 staff across 27 provinces. Urban water supply and sanitation are the responsibility of the Directorate General of Human Settlements (*Cipta Karya*), a separate agency within MPW.

Albeit the fact that UU 11/74 places the responsibility for system management and development with provincial governments, in practice, however, all system-development activities—including construction and rehabilitation—were controlled and implemented by DGWRD. DGWRD established Water Resources and Irrigation Project (Proyek Irigasi) offices in all major provinces, which are responsible for these activities leaving management of infrastructure O&M to the provincial dinas. Planning of irrigation and water resources development essentially follows a top-

[19]Provincial government sector departments are called a Service (*Dinas*). Large national government ministries like MPW are subdivided into Directorates General (DGs) by subject and each DG is further subdivided into Directorates.

[20]Single-purpose hydroelectric reservoir planning and operation are funded and undertaken by PLN which maintains its own network of river gauging stations. Multipurpose hydro reservoirs are constructed and operated by DGWRD (e.g., Jatiluhur and Kedung Ombo reservoirs) and sell power to PLN which exercises the market power of a monopsonistic buyer.

down approach dominated by DGWRD and Bappenas. However, provincial and district governments do identify their development needs and send the information to the provincial Water Resources and Irrigation Project Offices. Bappeda, the provincial arm of Bappenas, coordinates development planning at the provincial level. The plans developed in provincial offices are conveyed to DGWRD where plans and budgets are coordinated with the Bureau of Water Resources and Irrigation in Bappenas. If and when donor assistance is found by Bappenas for a project, the Ministry of Finance will be involved to approve counterpart Government of Indonesia funding and the loan amount.

Dinas organizational structure. The MoHA principle that all dinas units must be comparable in structure and management at echelon level causes major management problems in the water sector. For example, the chief of a Provincial Hydrological Unit (PHU)—albeit functionally responsible for managing a specialized unit requiring major logistics and field capability to collect and process data vital for strategic and operational water resources planning and management—cannot be of a higher echelon level concomitant with his/her responsibility and accountability, if an equivalent level of dinas subunit is lower in the general dinas organization organogram level. This makes it very difficult to appoint qualified and experienced managerial staff to a PHU. Similarly, for Provincial Basin Water Resources Management Units (Balai PSDA)—albeit part of the dinas structure is responsible for implementing sensitive water allocation and water regulations and, coordination with other agencies such as Bappedalas—it may not be able to appoint a suitable Unit Chief of the same civil service echelon level as those unit chiefs he has to interact with. Thus the structure and organization rules of the public administration are vital considerations and issues in crafting water administration reforms, irrespective of the nobility of policy goals, especially when they deal with crafting an institutional and organizational change in the roles and functions in government basin and irrigation management under the WATSAL reform program.

The programming, budgeting and financial-management system. The budget of the Government of Indonesia is divided into routine and (capital) development budgets. Apart from the national development and routine budgets, there were general-purpose and specific INPRES grant allocations from the center to provincial and district governments. Prior to FY 2000, all line ministry projects in general and externally aided projects in particular were funded by the national government's development budget (APBN) together with the government's counterpart contribution in local currency (Rupiah Murni). These projects were approved by Bappenas which also monitored their expenditures. Where regional expenditures were involved, budgets were transferred through a regional office of the line ministry. Whereas development was financed through APBN funds, O&M of provincial and local governments were financed primarily through INPRES allocations. Since provincial governments are aware that Project Offices have funding for rehabilitation, there is no incentive for them to contribute to O&M funding using their own revenue sources (APBD). Thus, a culture of deferred maintenance exists whereby INPRES funds become increasingly inadequate to take care of O&M needs; in fact, these funds are used for the most urgent repairs instead. The deferred maintenance phenomenon is not just a funding problem: rather, it is the result of the inappropriate institutional organization and financing of system development and management.

In the case of MPW, a project organization was set up with the project manager directly appointed by the MPW. These projects were provincially based in the case of irrigation, and basin-based in the case of dams and river infrastructure. However, the budget was also aggregated on a provincial or basin base with a financial project manager (*Pimpro*) who managed the budget for all projects in the province or basin. Thus the project manager had no control over his budget and

was dependent on subventions from the Pimpro. Thus accountability was defused and the use of funds for a specific project was sometimes used according to the priorities and whims of the Pimpro. Accounting and project management were haphazard and wholly focused on completing contracts which were always on an annual basis.

Programming was done by each project group whose development proposals were subsequently consolidated into an annual budget proposal or DUP. O&M funding, however, comes not through the DIP channel but through the INPRES. Several iterations were made depending on the budget envelope set by the Ministry of Finance and ministry committees in which the Pimpros reigned supreme. The ultimate approved annual budget for all projects (or DIP) did not always bear a strong relation to the original proposals and/or counterpart funding requirements for externally aided projects. The DIP is essentially a list of planned projects to be undertaken: any O&M expenses must be included in these projects or there will be no funds for transportation, office supplies, etc. The DIP always came late so that a year's work had to be completed in 7-8 months. This meant that money was either not prudently spent and/or an annual work program was never fully completed. The whole system led to the misuse of funds whose actual use was difficult to track, while managers in charge of implementation would never be responsible for planning their implementation carefully according to available funding.

Sector Policies

Water Resources Management

Water policy formulation approach. Until 1999, a formal water-resources management policy for Indonesia was never formulated and until 1998/99, the water sector policy was incorporated into the goal statements for each Five-Year Development Plan (Repelita), which is part of a 25-year Long-Term Development Plan (PJP). For each of the six Repelitas (1969/70 to 1998/99), the State Policy Guidelines (GHBN) contained water-sector goals under the framework for the agriculture sector till 1995 and only received independent treatment at the beginning of Repelita VI (1994/95 to 1998/99). The sector policies in the GHBN were primarily short- to medium-term output goals focusing primarily on water utilization and development outputs (number of structures, canals, new area irrigated, etc.) and less on integrated resource management and conservation. While playing a supporting role in most economic sectors, water resources management was left to MPW as stipulated under UU 11/74. The absence of both a national-level policy declaration on sustainable and integrated water resources management and a focus primarily on the development of irrigation infrastructure led to a gradual decline in sector performance.

The Cisarua seminar turning point. In the face of new pressures on water resources from increased urbanization, industrialization and pollution, which became evident in the 1980s, the government was urged to step up its efforts to develop and implement an integrated water resources management strategy. An international seminar entitled "Integrated Development and Management of Water Resources for Sustainable Use in Indonesia," sponsored by the ADB, CIDA, IBRD, OECF and UNDP was held in Bogor, West Java in 1992.[21] The seminar's key conclusions are:

a. All policy instruments (including rules, regulations, investment, pricing policies and managerial procedures, human resources development and technology transfer) should be based on values of efficiency, justice, equity and with sustainability as their goal.

b. DGWRD must develop an improved organization and human resources when water resources becomes a recognized sector in the national economy.

c. Water resources should be upgraded from a social function in PJP I to a social economic function under PJP II.

d. A river basin should be managed as an integrated unit including its upper and lower river reaches, to develop the regional economy, provided such management does not lead to environmental deterioration.

e. Private-sector participation in water-resources management should be encouraged by a specific policy of cost sharing.

f. Authority and decision-making capacity should be delegated to the provincial, district and river-basin levels.

g. A price system (water charges and environmental cost recovery) for all water uses should be integrated into all water resources policy formulation in order to achieve efficient and sustainable water-resources development.

h. Given institutional imperfections, following an inventory of the legal framework, gradual legal, policy and organizational reforms should be considered while keeping a balance between national and regional interests.

i. For each area of development, definition and enforcement of water rights such as rights to use, rights to transfer and/or rights to maintain resources without deterioration should be established and enforced.

j. Sector coordination problems should be solved with improvement of legal and institutional mechanisms, information and budgets.

k. A National Water Resource Council should be established to strengthen the principles of IWRM leading to more efficient, just, fair and sustainable development.

l. Assessments of water resources potential (quantity and quality), subsector water demand, effectiveness and efficiency of policies and managerial procedure should be conducted systematically throughout all processes of development.

m. Investment criteria for water allocation and management should be developed to pursue specific objectives such as rice self-sufficiency, municipal and industrial water demand, recreational uses and environmental sustainability.

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[21]"Water Resources for Sustainable Use in Indonesia," Proceedings of an International Seminar sponsored by National Planning Agency and Ministry of Public Works. Bogor, Cisarua, October 29-Novemnber 1, 1992.

n. All hierarchies of water-resources development and management should be suitably nested with clear jurisdictional boundaries, rights and responsibilities.

o. Water-resources development should be managed on a multi-sectoral basis adjusting to changes in demand for various uses to gain more efficient allocation and enhance sustainability.

The above recommendations were never formally adopted by MPW/DGWRD but it set in motion a general trend, which led to stronger implementation of the "one basin, one management" principle; however, it provided a framework for several policy projects to follow.

The FAO national water-policy studies. Prior to the Cisarua Seminar, a 5-year (1991-1995) UNDP/FAO supported National Water Resources Policy Study was undertaken to address policy issues.[22] This study produced a policy matrix in the form of a draft 25-year National Water Resources Policy Action Plan (1994-2020). Seven policies, covering the key policy areas of water utilization, water quality, water resources development and water resources structure, have been identified as a basis for future strategies and programs. These policies emphasize efficient water allocation and utilization, securing water quality, adjustment in economic and capital budget management, enhanced private-sector and community participation, and the need for a water administration structure consistent with the objectives of integrated water resources management.

The Policy Action Plan, reflecting both direct water-resources policy objectives and cross-sectoral policy coordination, is presented as a matrix of specific required government actions covering water-resources management, socioeconomics and finance, environmental management, and legislation and administration. With respect to the administration structure, the policy emphasizes the river-basin management approach. The policy also requires the government to establish a National Water Resources Council structured as an interministerial Committee of Ministers and a Technical Committee of Directors General. This draft policy framework was not formally adopted by the government as it never received a ministerial review and remained within DGWRD. Nevertheless, it was used by Bappenas as an input into the formulation of Repelita VI. However, no implementation goals were set for these policies and they remained a paper exercise.

The IBRD WRM policy initiative. The World Bank tried to force the issue of a national water policy by making it a condition for Board Presentation of the Java Irrigation Improvement and Water Resources Management Project (Loan 3762-IND) or JIWMP. This resulted in a memorandum from the DGWRD Director General to the World Bank indicating a number of general policies following the 1992 Cisarua Seminar recommendations. These policies were:

a. Water-resources management in river basins and aquifers would consider national, regional and local interests within the context of spatial planning so that water resources utilization and environmental management can be carried out harmoniously, effectively and efficiently.

b. Surface water and groundwater management would be conducted in an integrated manner through coordination and considering national, regional and local interests.

[22]Directorate of Planning and Programming, DGWRD, MPW: Draft national water resources policies: First draft-May 1992; Project UNDP/FAO INS/90/024 National Water Resources Policy.

c. Water-resources development would be carried out by the government with active community participation so that the costs arising from O&M of water-resources development are duly shared.

d. Integrated water-resources management would ensure that the quantity and quality of water-resources utilization is in balance with environmental capacity to support future development needs.

e. Cost recovery for water-use-related services would be based on a cost allocation procedure with the government retaining the option to grant subsidies for uses having an impact on poverty alleviation and food self-sufficiency.

f. Water allocation would be based on social, economic and environmental values.

g. The institutional system, principally its operational capability, would be improved to support the implementation of efficient integrated water-resources management.

h. Capacity building of the human-resources sector would be enhanced as an inseparable part of WRM.

Integrated water resources management in line with these policies would be implemented by the following strategy:

- Institutional and organizational systems would be applied for consistent coordination between the national and provincial governments, including delegating a larger role to the provinces, to support the process of integrated water resources management.

- The Minister responsible for water resources would formulate national-level policies based on the strategic national interest in coordination with other national ministries and institutions, while Governors would formulate regional policies in coordination with appropriate interests.

- Transfer of water-resources management to provincial governments would be assisted by Provincial Water Management Committees (PTPA) and Basin Water Management Committees (PPTPA) whereas, for interprovincial basins, the provinces would be assisted by Interprovincial Water Resources Management Committees, except for 17 SWS of strategic value that will remain the responsibility of the national government.

- Water resources and environmental management would be governed by legally established National, Provincial and District Spatial Plans.

- The SWS system would be used for water management based on a master plan for integrated, efficient and effective management and protection of water resources.

- Water allocation would be in accordance with principles consistent with IWRM.

- Conjunctive use and management of surface water and groundwater would be based on an integrated water plan for development and utilization taking into consideration the continuing function of the resources and environmental balance for future development.

- Water quality in polluted rivers and water bodies would be managed through waste-discharge control and flow management.

- The function and benefits of water resources development would be maintained through adequate O&M with application of appropriate technology for achieving efficient water use.

- A favorable atmosphere and facilities would be created conducive to community participation in water-resources management.

- The inter-sectoral and interregional skills for efficient allocation and utilization of water would be improved.

Again, albeit a sound policy statement, the DGWRD Policy was never translated into Indonesian and disseminated within DGWRD as a general policy to be followed. As such, it can be considered to be of little consequence in influencing IWRM in Indonesia.

The 1992 Cisarua Seminar focused on the water-resources management policy options and emphasized nationwide river-basin management in addition to setting up management corporations in a few strategic basins. It was recognized that there is a need to develop and maintain river utilization infrastructure and that all basin activities affect water-resources management. DGWRD subsequently responded with the creation of a Subdirectorate of Water Utilization and Planning and an MPW decree on the formation of Provincial Water Regulation Committees (MPW Regulation 67/1993). The first five World Bank-supported pilot river basin management programs resulted from the JIWMP BWRM policy initiative. The pilots were based on the establishment of Basin Water Regulation Committees (PPTPA) and Provincial Basin Water Management Units (Balai PSDA). Balai PSDA establishment was facilitated by the Ministry of Home Affairs Decree 79/96 that places the unit under provincial government control within the PWRS. A Balai PSDA is to undertake basic hydrological data collection, water-quality sampling, maintenance of river infrastructure and the operational aspects of compliance with water allocation and abstraction determined by a Governor. It was DGWRD's policy to ultimately establish a Balai PSDA and PPTPA for each of the 90 legally defined River Basin Territories of Indonesia.

The ADB Capacity Building Project (CBP) for the water-resources sector (Loan 1339-INO). The World Bank's pilot efforts to support basin planning and water management under JIWMP were followed by the ADB-supported Capacity Building Project (CBP), which became effective in April 1995. This 5-year project is far more ambitious than JIWMP in reforming national water policies and upgrading DGWRD capabilities. Its stated objective is: "...strengthening institutional capacity at national and regional levels for sustainable, multi-sectoral and economic management and use of water resources on a river-basin basis." Achievement of this objective is predicated on strengthening: a) operational policymaking and existing policy instruments, b) institutional frameworks for coordination, c) management systems and processes, d) technical standards and practices, and e) related human resources systems and skills of national and regional water-resources management agencies.

CBP's focal National Policy and Coordination Framework component was expected to: a) establish a national framework for water-resources policy and coordination, b) establish a national water-resources database on water demand and supply, and c) review existing water-resources policies, regulations and management systems, and develop national water-resources guidelines. The project's second component[23] deals with strengthening the capacity for integrated water resources development and management in eight Outer Island provinces. This includes capacity building for water management, water-quality monitoring and hydrology. The third project component[24] provides for strengthening the capacity of DGWRD to overcome its weaknesses, namely: inadequate experience in basin planning and management, weak performance and accountability in its traditional implementation functions, and low level of its human resources management and development.

The progress in implementing CBP's policy component has been poor. ADB's September 1997 supervision mission has assessed the degree of completion of each component of each project output as less than satisfactory due to "...lack of ownership, commitment, and high-level policy and management support...."[25] Setting up of the Provincial Hydrological Units (PHUs) was the best institutional outcome (though it did not address aspects of embedding it in the structural organization or its funding). Very little was done even in the technical aspect of water management, whereas the technical aspects of water-quality monitoring were covered to some extent: Whether this is sustainable in the eight provinces is a basic question. The hydrology component was the one that progressed well. Component 3 on human resources development and management had a marginal impact as it was affected by major organizational changes in MPW. The attempt to introduce Result-Oriented Management (ROM) was a failure. Training did provide some capacity building. In the end, CBP's major contribution was assistance to the WATSAL Task Force in preparing draft legislation and policies.

The basic lessons learnt from CBP were that it: a) did not address issues of sustainability, b) did not institutionalize capacity-building activities, c) worked outside of the structural organizations through a project approach that was funded mostly by a loan without much counterpart funding, especially in the provinces, and thus its effort was liable to cease upon project closure, d) lacked program delineation between individual capacity development and institutional capacity building, e) lacked ownership at the local level, and f) the whole CBP program was mainly focused

[23]The capacity strengthening of regional institutions' component focuses on five Eastern Island provinces (including South Sulawesi and North Sumatra). It would: a) establish basin water management committees, b) establish water resources data systems, water quality data database and monitoring systems, and water-allocation and -accounting systems, c) upgrade and strengthen river maintenance systems, d) strengthen staff skills in the Provincial Water Resources services, and e) establish and upgrade hydrometeorological networks.

[24]The project's third component will strengthen DGWRD capacities in: a) policy and management systems, b) technical support to Regional Agencies, c) project design and implementation, and d) technical support to the private sector.

[25]The September 1997 aide mémoire stated: "...it appears that slow progress in project implementation also owes to the lack of consensus in DGWRD as to the overall goal of the project because of inadequate understanding of the project design and to lack of ownership, commitment, and high-level policy and management support...the project has not received so far the necessary commitment and active support of senior management in MPW, DGWRD and PWRS. Similarly, there has been a reluctance to implement the process approach encouraged under the project. Few, if any, of the new structures, standards, systems and processes designed under the project have been tested and refined. Likewise, failure to nominate twenty in-house advisers for training and assignment before they take over direction and management of the project does not allow institutional change to take root within DGWRD and PWRS."

on the central agency. The major lesson of CBP is that capacity building, as part of the institutional development, must be built into all future programs as part of the structural activity funded from the routine budget."

Rice Policy and Irrigation Management

To solve the rice policy problem a paradigm shift in public rice policy is needed. This paradigm shift must take into consideration that:

- Traditional rice policies have become increasingly ineffective and inefficient.
- Indonesia is becoming more and more democratic, and in a democracy it is the people's welfare that must be improved.
- Rice is a quasi-public good, in that its production generates public services that are very valuable indeed.
- Self-sufficiency in rice needs to be replaced by a focus on rice-based interventions as a means to catalyze rural development and underpin food security.

A rice policy needs to be formulated in line with the requirements posed by Indonesia's changing economic and political environment. Fundamentally, rice policy should be designed to stimulate resource allocation in line with the social opportunity cost of rice: if not, then public policy is badly undervaluing rice. Rice policy should recognize that rice production, at present, is highly depressed. There have been several years of below-trend production, and rice farm incomes are near historical lows. For many years, Indonesian rice policy has been based on the border-price rule and a desire to achieve self-sufficiency. These two are not appropriate as guiding principles anymore. They will not guarantee that social welfare is maximized. The shadow price of rice is much higher than the rice border-price, and this must be used to guide national resource allocation. Rice self-sufficiency concentrates attention on a commodity balance, rather than on the needs and aspirations of the rural people or the food security status of consumers as a whole. Rice policy must be reoriented so that the focus is on maximizing social welfare. This means that the value of rice in Indonesia is its shadow price, and the rice policy must be used as an engine for rural development and a tool for advancing food security.

International rice prices have been on a declining trend since 1974. Normally, large Indonesian rice imports drive up world market prices, but fortunately this has not happened during the past 2 years. In real terms, international rice prices are now at historical lows. Should Indonesia take advantage of low world market rice prices to benefit domestic consumers? Both in the near and the long term, the answer is an unequivocal no. Allowing Indonesian prices to fall to world market levels would undervalue the contribution that rice production makes to Indonesia's social welfare. A sustained period of low domestic rice prices can impair Indonesia's capacity to generate adequate rice in the future, if and when global prices recover. Increasing dependence on a market that does not value rice at the Indonesian opportunity cost and that cannot always be counted on to meet Indonesia's excess demand is both risky and ill-advised. Furthermore, Indonesia would then most likely be subject once more to large-country trade effects.

Irrigation O&M policy (1987). Irrigation was the major source of subsidy to rice production during the New Order period 1968–98. The rehabilitation of existing schemes was a significant achievement, albeit with quality problems, and weaknesses in the development of the complementary management and maintenance capability were not fully addressed. Consequently, some of the schemes rehabilitated in the early seventies were in urgent need of rehabilitation by the mid-80s. Many projects had continued for 10–15 years with the main sustainability issue being the ability to gain the necessary annual budget authorizations to continue operations and undertake maintenance. By 1987, the World Bank had lent about $2.0 billion for irrigation and accumulated a number of audits and impact studies. Those studies had become increasingly critical, intensifying pressure for a fundamental change in Bank policy. Critics inside and outside of the Bank made a number of assertions about the portfolio that, inter alia, concluded:

- The government clearly favored rehabilitation over maintenance. Provincial governments, ostensibly responsible for O&M, shared this preference and did not choose to use their own revenues and block grants for O&M. Experience had taught them that rehabilitation projects would be forthcoming from the central government and donors, at no cost to them.

- Monitoring of both O&M and agricultural benefits was inadequate.

- Farmers did not participate meaningfully in initiating irrigation development. Although completed schemes were eventually handed over to provincial governments, neither they nor the farmers had adequate "ownership" of schemes. Schemes often remained partly under "project offices" under the central government.

- Earlier attempts at tertiary-level irrigation development failed, and coordination between the multiple agencies responsible for fully utilizing irrigation infrastructure was inadequate.

- The goal of achieving rice self-sufficiency undermined the achievement of food self-sufficiency and agricultural diversification, especially off-Java, where the rice intensification program made less sense.

- "Institutional strengthening" and "decentralization," rather than involving fundamental reform, worked within the highly centralized, hierarchical New Order government.

The IBRD Irrigation Subsector Projects (ISSP-I and ISSP-II) that followed shifted from new construction and rehabilitation of irrigation schemes to a national focus on maintenance and completion of existing systems. When economic conditions in Indonesia deteriorated in 1986–87, the World Bank saw it as an opportunity to advocate policy reform through ISSP I (1988–92), which ostensibly signaled a change of direction and initiated a new 15-year sector lending program. ADB followed suit with similar Integrated Irrigation Sector Projects (IISP I and IISP II). The rationale for a new irrigation policy was articulated by the government in its so-called 1987 Statement of Irrigation Operation and Maintenance Policy (IOMP). The primary objective of the ISSPs and IISPs in implementing the IOMP was to improve O&M quality through adequate financing, proper staffing and training. The IOMP 1987 contained five major initiatives, namely: a) an "Efficient Operations & Maintenance"[26] (EOM) funding program based on a "Plan for

O&M"[27] (POM), b) direct cost recovery for O&M through property tax land classification and an Irrigation Service Fee program, c) an institutional development program (PIK) for WUAs to facilitate management transfer to WUAs for schemes smaller than 500 hectares, d) "Needs-Based"[28] programming, budgeting and monitoring for O&M, and e) rationalization of irrigation investment expenditure through a "Special Maintenance"[29] (SM) program.

The IOMP 1987 was based on the axiom that poor maintenance, rather than poor quality construction, was the cause of rapid deterioration. The mechanism to correct this was to transfer technical know-how by introducing new procedures, producing manuals and conducting training courses. Under EOM, a system-specific manual would be used to produce a plan to guide operations. Maintenance activities would be systematized with a register used to prioritize needs, based on professional technical judgment. EOM therefore should have led to maintenance, based on the need for the works to be carried out, not on the average allocation of the funds for general maintenance. The innovations envisaged for O&M were of a fundamental engineering nature, designed to replace a system that was overstaffed, neglected maintenance, and had too many administrative personnel and too few trained field personnel. The final budget was termed a "Needs-Based Budget." (NBB) In its purest form, EOM required 1-, 5-, 10-, and 15-year work plans for preventive periodic maintenance, making premature rehabilitation because of unnecessary deferred maintenance. A fundamental principle underlying SM was that small schemes less than 500 hectares in area would be completely rehabilitated before being wholly turned over to farmer management without further support.

The IOMP 1987 marked a policy change in the balance between the central and provincial government, private and communal provision and, responsibility and authority. The IOMP attempted to shift many government roles from a construction and rehabilitation orientation to one of improved O&M, cost recovery and farmer involvement through WUAs. The policy was designed to create new institutional roles and responsibilities for government personnel and expand the decision-making role of farmers. Between 1987 and 1999, the total number of WUAs increased from 6,500 to 36,656 (out of a target of 106,000 village WUAs), while those rated by government as "active" increased from 482 to over 7,000. The government also strengthened the status of WUAs by providing opportunities for these organizations to become legal entities with contractual rights under

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[26]*Efficient Operation and Maintenance (EOM)* consists of those operational activities of a routine nature carried out by the O&M organization necessary to provide the planned service to water users and to fully maintain the system (without separate rehabilitation or upgrading programs) in a condition to function as planned, on into the future.

[27]*Plan of Operation and Maintenance (POM)* consists of a set of documents, varying in extent and detail depending on the size and nature of the specific project. The POM should be initiated before design or modifications commence so that the resulting facilities are tailored to that system's adopted scheme of operation.

[28]*Needs-Based Budget (NBB)* comprises a detailed budget to adequately cover all EOM, as defined, for each specific system. It is not to be a fund request for whatever may be desired in staffing, equipments and works. It should reflect the respective POM and the staff, equipment and actions required to provide the defined service and fully maintain each feature (including replacement) and the system's overall integrity, permanently into the future.

[29]*Special Maintenance (SM)* consists of maintenance needs that have accumulated in a system that has recently been fully rehabilitated and that otherwise contains the essential structures required in the systems to be turned over to WUAs. Upon completion of SM, all facilities and supporting equipment should be completed and in a sound condition fully meeting high standards of construction.

Indonesian law (MoHA Decree No. 12 of 1992). IOMP also supported an extensive Water Users Training Program that helped train thousands of farmers.

Irrigation System Development

Policy and strategy. Since the beginning of PJP-I, the government has recognized that farmers will invest in rice production inputs if reasonable water security is provided by irrigation. Thus food security and rice self-sufficiency are dependent on the performance of lowland irrigated rice production. The government's strategy therefore includes: a) extending irrigation facilities by the development of new schemes, b) rehabilitating and upgrading existing schemes to improve their performance, and c) managing existing irrigation schemes better. There is no formal policy similar to IOMP 1987 to guide development of irrigation schemes. The fundamental assumption is that the country needs to extend irrigation facilities to make up for loss of agricultural land on Java to increased urban development.

Effective irrigation-investment issues. Given the future shortage of capital, the investment strategy of maintaining rice self-sufficiency through expansion of irrigation and swamp reclamation needs review, especially with respect to the choice of most cost-effective and environmentally sustainable production interventions. The fundamental question facing planners is what investment strategy is appropriate at this time to keep up with a projected rice demand in CY2020 of about 62-64 million tons while keeping imports to a minimum? Should expensive expansion of irrigation schemes continue, or can the productivity of existing schemes[30] be upgraded with much lower investment of about US$1 billion by rehabilitation and scheme completion? It can be shown that despite loss of land due to urbanization of Java, increased rice production to attain CY2020 requirements may be achieved by raising the productivity of existing irrigation schemes instead of developing new projects (annex 1). Apart from replacing about 110,000 hectares of sugarcane with rice in Java, increased rice output would be mainly achieved on the Outer Islands by: a) market incentives for raising irrigated rice yields and cropping intensity to levels closer to those of Java, b) completing over 700,000 hectares of partially built irrigation networks, which are technically and economically viable, and c) developing only about 120,000 hectares of new schemes. In addition, an expansion of about 80,000 hectares of irrigation in Java and about 100,000 hectares of swamp rice schemes would be needed.

Sector External Aid Policy and Donor Project Coordination

No framework for donor coordination existed prior to 1999. Each multilateral or bilateral agency would pursue its own agenda with DGWRD and selected projects from a Bappenas "Blue Book." Coordination of external aid and sector coordination with other agencies was provided by Bappenas.

[30]About 86 percent of the country's 6,730 public and village irrigation schemes cover a total area of about 1.65 million hectares and are smaller than 1,000 hectares; only 133 schemes covering 1.57 million hectares are larger than 5,000 hectares.

Sector Performance Assessment ("Rules in Use")

Poor Water Resources Sector Physical Performance

Need for new policy paradigms. The management of Indonesia's water resources sector faces increasingly complex long-term investment challenges and management problems, which are likely to severely constrain the country's economic development and food security, lead to a deterioration of public health and irreversibly damage its aquatic environment. These problems arise from: a) the synergistic adverse impacts of population growth, urbanization[31] and industrialization, and b) an ineffective sector administration guided by outdated sector policy paradigms, management institutions and data systems, which are increasingly incapable of addressing emerging problems and challenges in an effective and coordinated manner. The principal problems relate to growing water shortages and inter-sectoral competition, water pollution, environmental damage, downstream watershed degradation impacts and declining physical and fiscal sustainability of existing irrigation infrastructural facilities. The challenges posed by these problems need to be addressed by comprehensive policies, integrated cross-sector strategies, improved institutions, and fiscally and environmentally sustainable programs.

Water Resources Management Performance

Water demand-supply gap. In some river basins, particularly those with large urban areas, such as metropolitan Jakarta and Surabaya on Java, surface water and groundwater resources are reaching a critical stage of maximum use and inter-sectoral competition.[32] For example, interbasin surface water transfer to metropolitan Jakarta must expand by at least 60 percent in the next 20 years to replace groundwater and cater to a doubling of population: this is only possible at the expense of irrigation.[33] Because of this demand competition and inadequate reservoir storage[34] to store excess monsoonal runoff, urban and industrial growth have resulted in locally reduced supplies for irrigated agriculture, which is the largest water user and produces 79 percent of the country's rice. There is little alternative to coping with growing nonirrigation water demand in Java except through greater irrigation efficiency, higher rice yields and cropping diversification to more remunerative but less-

[31]About 58 percent (118 million) of Indonesia's population of about 204 million reside in Java. In 20 years' time, the national population will be about 258 million and the urban population is expected to increase from 74 million in 1998 to 127 million in 2018.

[32]In Java, demand is projected to increase by some 70 percent over 1990 levels by the year 2000. In 1990, the water availability deficiency in Java stood reportedly at 5 percent during low flow periods. This ratio is projected to increase to about 40 percent by the year 2000.

[33]Groundwater constitutes nearly two-thirds of the water demand serving about 70 percent of a population estimated at about 21 million in 1990. The metropolitan population in the year 2025 is forecast at about 50 million. Municipal and industrial water demand is expected to triple between 1990 and 2025. While groundwater abstraction could expand by 50 percent in a 30-year period, it is increasingly polluted by seawater intrusion into the aquifer and waste disposal, while over-pumping results in increasing land subsidence (with adverse consequences for urban drainage and flooding).

[34]Current reservoir storage capacity does little to smooth out large seasonal variations of river flows. With a few exceptions, simulation studies indicate that Java reservoirs only reduce the shortfall in irrigation and urban water requirements by about 10 percent in a dry year.

water-intensive crops. This adjustment will require effective seasonal inter-sectoral water allocation and regulation by strong basin-management organizations working within a water rights and licensing framework. It will be imperative to shift management strategy from a water sources development orientation to one of reliance on an effective institutional framework for water-use allocation based on water use and water-quality rights, water pricing and operational recognition of water-conservation needs.

Urban population access to piped water supply. In urban areas, access to clean piped water supply is wholly inadequate: in 1998, only 40 percent of Indonesia's urban population had access to piped water. Bank estimates indicate that, in Jakarta alone circa 1992, the avoidable annual public health damage from unsafe water ranges from about $40 million to $700 million with a likely average of $300 million. However, since the urban population is projected to grow at a rate of about 6.4 percent per year, completion of affordable water-supply investments in CY2008 serving 62 percent of the population, would still leave an urban population without access to piped water, which is equal in size to the unserved population of 1998. A recent Bank urban water-supply policy study[35] estimates that meeting a program target of providing piped water access to 62 percent of the urban population by CY2008 would require investment[36] of Rp18 trillion (about $7.5 billion in 1997 US dollars). These amounts should be compared with the programmed investment of only Rp 3 trillion during Repelita VI (1992-1997).

Prior to1997, it was believed that water-supply investments could be increasingly financed from increased water tariffs and the capital market. The World Bank analysis indicated that improved urban water supply would be affordable if urban water management reforms are carried out that would transform municipal water supply companies (PDAMs) into an autonomous and creditworthy industry. However, if the urban water supply subsector is not able to attract commercial financing because it is perceived as too risky under the present economic climate, the above levels of investment would be an unaffordable burden on the government's budget. To date, a private concession is responsible for water-supply distribution only in metropolitan Jakarta although West Java is seeking an institutional arrangement that would attract private investment to alleviate Bandung's water-supply problems.[37]

Municipal wastewater disposal. By 2018, people will produce about 5 million m^3/year of domestic waste. Unless treated, this waste discharge will exact a severe toll on river water quality and aquatic life, especially in the dry season when river flow is reduced by water diversion for irrigation and other consumptive uses. From the health point of view, many rivers in Java have escheria coli and coliform bacteria levels far in excess of allowable levels as a result of domestic sewage effluents. For example, Ministry of Health data report that the annual number of drinking water samples passing bacteriological tests in Jakarta fell from 80 percent to 42 percent in the 1980s, while the number of recorded cases of diarrhea rose from 10/1,000 persons to 20-25/1,000 persons between

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[35]World Bank: *Indonesia Urban Water Supply Sector Policy Framework*; Indonesia Discussion Paper Series, No. 10, East Asia and Pacific Region, October 30, 1997.

[36]Expressed in 1997 constant prices at an exchange rate of US$1.00 = Rp.2,400.

[37]Groundwater comprises a large portion of the city's water sources but water tables are falling as the aquifer is heavily overdrawn due to the large number of licensed and illegal wells. Needless to say, the necessary satisfaction of Bandung's water supply requirements will increase the wastewater load in the Citarum river and its reservoirs.

1981 and 1987. A major cause of water pollution is urban domestic waste: for example, in four watersheds in Jakarta, the proportions of raw sewage and solid waste loadings are 97.5 percent, 92.5 percent, 58 percent and 84 percent. Current estimates[38] suggest that the social costs of inadequate urban sanitation (diarrhea incidence only causing a diseconomy of $24/capita/year) are at least US$1.8 billion annually (in 1998 constant prices), or about 0.9 percent of Indonesia's annual GDP (estimated at US$200 billion). In view of growing urban wastewater discharge as a result of increased urban piped water supply, it is imperative to revisit conventional wisdom, which regards sewerage and sewage treatment as publicly and privately unaffordable in Indonesia.[39]

Inadequate investment in urban sewerage and waste-treatment infrastructure (less than 5 % of the country's urban population is served with sewerage) has led to decreasing environmental health, increasing surface water and groundwater pollution and degradation of important environmental resources.[40] Apart from an opportunity cost of foregone irrigated production, using dry-season river flow to flush urban drains does not solve the sanitation problem, but only moves pollutants to another location causing environmental damage. This damage is particularly significant in estuaries and coastal waters. The annual damages to tourism and fisheries due to the absence of wastewater treatment are estimated at about $322 million (tourism [$101 million] and fishery [$221 million]). These damages do not include river pollution diseconomies such as increased urban water-supply treatment costs, investment in conveyance of clean water, degradation of river fisheries (e.g., replacement of high-value table fish by low-value species), or reservoir aquaculture losses (e.g., cage fisheries in the Saguling reservoir on the Citarum river in West Java are periodically damaged by untreated Bandung wastewater).[41] A survey and mathematical modeling studies of 37 reservoirs in the Cisadane-Cimanuk catchment in 1989 forecast deteriorating conditions in most of them, with serious deoxygenation and excessive growths of floating macrophytes becoming worse over the next two decades.[42] In Indonesia, municipal wastewater generation has not yet been acknowledged as a water supply externality and the costs of protecting water sources are not made explicit and charged to water users.[43] Legislation does not specifically regulate discharge of municipal wastewater

[38]Dillon Consulting Ltd.: *Towards a National Environmental Sanitation Program for Indonesia*; Jakarta, October 1998.

[39]A 1991 World Bank study concluded that a sewerage levy of 1 percent on the capital development costs of all ongoing and new high-rise commercial and residential developments in Jakarta's central business area could finance the construction of a comprehensive central sewerage and treatment system which would also serve the adjacent low-rise residential areas.

[40]In Jakarta Bay, the percentage cover of living coral has been reduced to only 10 percent at about 10 km from the shoreline and to 40 percent at a 50 km distance. Similar damages are likely to the coral reefs near Manado and Ujung Pandang in Sulawesi and the tourist resort areas of Bali.

[41]Cage fish kills are occurring in Saguling with increasing frequency. Bandung waste discharge results in septic water flow into the Saguling reservoir which concentrates in the lower reservoir and exacerbates its anoxic condition. The reservoir sediment also becomes polluted by the settling pollutants. Consequently, when large floods occur—and especially when reservoir level is low—their entry into the reservoir causes currents that move the anoxic deeper water and polluted sediment upwards. The arrival of polluted water near the water surface apparently causes fish kills. The unregulated cage density and use of fish feed also contribute to lowering of water quality and therefore make it easier to degrade water quality to levels that fish cannot tolerate.

[42]"Cisadane-Cimanuk Integrated Water Resources Development" (BTA 155); Volume VIII-A, p.15 et seq., Delft Hydraulics and Puslitbang Pengairan, 1989.

and sewerage into rivers and lakes in conformity with prescribed environmental or recipient water body standards.

Wastewater disposal is generally regarded as a public good and its investment burden falls on the government shoulders. A 1998 study estimates that an investment of about $1 billion is needed for sewage collection in predominantly low-income urban areas covering only about 60 percent of the country's urban population. The contribution of even the wealthiest cities has hardly exceeded 15-18 percent of investment costs in the past. Consequently, the Directorate of Human Settlements (Cipta Karya) of the Ministry of Public Works (MPW) retains an inordinate control over investment priorities without being accountable for the investment's sustainability. Those local governments, which have sewerage and treatment facilities, assume responsibility for O&M and cost recovery through their PDAMs (water supply corporation) or a PT PAL (wastewater corporation). However, even where a sewer system has been constructed to supply wastewater treatment plants as in Bandung, the household connection rate is as low as 30 percent. The lack of quantitative data on poor sanitation costs, inadequate community support and local-government commitment, all contribute to ineffective investment in sewerage and wastewater treatment.

Industrial effluent impacts. Industrial waste is projected to grow fourfold-fivefold from about 0.25 million tons in 1990 to about 1.2 million tons in 2010. About 80 percent of this waste is composed of toxic and hazardous materials, heavy metals, pesticides and organic materials that are not biodegradable. At most industrial sites, sludge from the treatment of industrial waste is normally not found: this suggests that the sludge is disposed of directly into the environment. Industrial water pollution has adverse downstream economic and environmental impacts: for example, brackish water shrimp production on the north coast of Java is increasingly threatened by pollution and this production may have to be relocated. Similar losses are noted for communities in the Outer Islands threatened by the rapid growth of processing and mining industries. Industrial toxic waste also adds to the vulnerability of shrimp exports: for example, antibiotic residues were found in Indonesian tiger shrimp exported to Japan, which led to the search for an alternative supplier. Other adverse impacts are hazardous bioconcentration of toxic metals (e.g., mercury in fish as a result of informal-sector gold mining in Kalimantan). Thus, industrial pollution mitigation can not only be concerned with balancing the commercial viability of industry with environmental values but must consider the diseconomies caused throughout a river basin.

Watershed degradation. An increasing hazard to sustainability of water infrastructure and river quality is the high and continuously growing sediment yield due to deforestation and changing land use. Estimates made in 1990 place the deforestation rate from logging, development projects and smallholder conversion at about 0.9 million hectares per year (Indonesia had about 150 million hectares of closed canopy forest at that time). Soil erosion, increased irrigation maintenance costs, losses in reservoir yield and power production due to sedimentation result in an estimated soil productivity loss of about $US315 million per annum on Java (1988/89 prices) while harbor dredging is estimated at about $US25-90 million per year. Low river flows are apparently also reducing because of decreasing groundwater replenishment as a result of increased storm runoff due to deforestation. Whereas the number of catchments in critical condition was 22 in 1984, it rose to

[43]A recent ADB-supported study claims "Willingness-to-Pay" studies indicate that poor urban households are prepared to pay up to 2 percent of household monthly income (about Rp 25,000) on improved sanitation.

39 in 1992 and now stands at 59. A study of the Cisadane-Cimanuk catchment in West Java indicated that consequential sedimentation in 15 reservoirs is estimated to cause a 50-year loss of active storage capacity ranging from 0 percent to 100 percent with an average of 25 percent.[44] To improve the efficiency and environmental sustainability of forest management, the government has issued a forest exploitation regulation which defines, for all potential legal entities in permanent production forest estates, the terms and conditions of forest use. The impacts of erosion and sedimentation on river infrastructure need to be factored into the determination of watershed management priorities in a river-basin management context. Watershed utilization and management can therefore no longer be regarded as an upper watershed productivity and conservation issue: its priorities must also be determined by downstream impacts on rivers, river infrastructure and floodplain productivity.

Flooding. Flood peaks are increasing due to changing land use and deforestation thus causing increasing flood damages to the rapidly urbanizing coastal areas (particularly in Jakarta, Medan and Semarang metropolitan areas). Increasing investments are therefore being made in flood-protection facilities. However, flood protection facilities are proving to be inadequate and flood damages are increasing due to rapid floodplain urbanization. Only about 30 percent of the 1.4 million hectares exposed to frequent flooding are protected. Even where flood protection facilities exist, major damage is caused due to their lack of maintenance and enforcement of land-use controls.[45] Land-use zoning and flood-proofing are viable nonstructural flood mitigation interventions as well as incorporation of flood discharge amelioration measures into the design and operation of multipurpose reservoirs. The State Electricity Corporation (PLN) owns and operates large reservoirs that are single-purpose hydro facilities. These often occupy the only significant storage sites existing in many basins. Without enforceable basin-wide multipurpose operating rules, the maximum national benefits cannot be realized, particularly for water supply and flood protection. This requires joint land/water-resources management and spatial planning, with project formulation guidelines and facilities operation different from those followed under the established institutions.

Environmental impact of swampland development. Rice self-sufficiency concerns and transmigration policy prompted the previous government to embark on a hastily prepared "Million Hectare Peat Swamp Project" in Central Kalimantan. This project raised concerns of dubious productivity, economic efficiency and sustainability together with apparent adverse impacts on forest resources, the indigenous population, wildlife habitat and water quality. To date the Government of Indonesia has spent about US$630 million since 1996 from largely off-budget sources to construct main supply canal networks, develop about 30,000 hectares and settle 15,000-20,000 families. However, it has become apparent that the technical design itself is not feasible or sustainable and all further investment has been scaled down to the existing settlement area. This fiasco is an example of the inadequacy of national-development planning and the national environmental-assessment process for large public projects. Indonesia thus needs a national swampland development policy

[44]"Cisadane-Cimanuk Integrated Water Resources Development": BTA 155, Volume IX – Erosion; September 1989.

[45]The January 2002 flooding of Jakarta in which 200 people died from flood-related impacts is a good example. Much of the flooding was caused by lack of major and urban drainage maintenance (sedimentation and blockage by solid waste); there are no controls over illegal building and encroachment in reserved flood plain areas, inoperative drainage pumps due to a lack of maintenance and a poor flood response system.

that is integrated with spatial development plans, and that balances technical and economic feasibility with social, environmental and conservation concerns.

Food Security and Irrigation Development Affordability

Irrigated rice production. It is hard to exaggerate the importance of rice in Indonesia. Rice provides more than half of the total calories and protein in the Indonesian diet. Rice production is the main source of income and employment for more than 26 million rural families. Experience has shown that political and social stability can become unhinged in the absence of adequate national rice supply. Poverty is first and foremost measured in terms of a household's ability to afford an adequate amount of rice. Indonesia achieved self-sufficiency in rice production in 1984 through government efforts on the supply side to increase agricultural production through cropping intensification, and irrigation scheme construction and rehabilitation. Average rice yields increased from 2.1 tons per hectare in the mid-1960s to about 4.3 tons per hectare in the early 1990s as a result of the introduction of improved rice varieties and increasing irrigation. This trend was maintained until 1994, when it became a net importer. Production has lagged behind demand and has become much more volatile in the 1990s. A declining trend in rice production growth and growing output volatility is a serious threat to food security. Added to this is the fact that incomes from rice farming are so low that most rice farmers remain trapped by poverty.

Average annual rice production growth rates on Java declined from 5.7 percent per year in 1980 to 1.1 percent per year in 1996, while off-Java, the average annual production growth rate grew from 3.5 percent to 4.1 percent in the same period. This asymmetric growth reflects the leveling-off of rice yield increases and loss of irrigated area due to urbanization on Java, while irrigated and reclaimed swamp area increased on the Outer Islands. In 1995, irrigation produced about 79 percent of the rice output of 48.75 million tons[46] of which about 65 percent was produced in Java (annex 1). However, the buildup of a high rice production capacity of Outer Island irrigation investments is generally slow: canal networks for 500,000-700,000 hectares are not yet operational due to nonfunctional canals or incomplete main canals and tertiary networks.[47] The Outer Island swamp drainage projects[48] require very high development costs for settlement, land clearing, water control and settlement infrastructure to attain a potential productivity, which is generally still 50-60 percent less than that of Javanese irrigation schemes. At present, although almost one-third as

[46]About 79 percent of the rice production comes from a canal-irrigated area of about 4.78 million hectares, of which about 3.01 million hectares were constructed by the government: the remainder consists of small village schemes that, for the most part, have received some government-sponsored technical improvements.

[47]Some Outer Island schemes are too large in relation to a reliable river flow because of poor planning: hence a high cropping intensity is not possible. Other schemes are in various stages of completion due to funding shortages. In some cases, the planned high rice cropping intensity is not compatible with farmer preferences in generating cash income from more lucrative tree crops.

[48]Swamp areas have generally been developed as transmigration settlements. These consist of about 0.55 million hectares of tidal water-management schemes and about 1.14 million hectares of predominantly inland swamp drainage. The isolated location of these schemes, unsustainable input programs, poor water control, organic soil degradation, poor markets and a preference for lucrative tree crops, result in low scheme productivity.

large as the irrigated area, highly subsidized and unsustainable public swamp rice schemes contribute only 4-5 percent of the total rice production.

The sad state of rice production can be traced to: a) technological stagnation and degradation; b) declining soil fertility; c) cropping intensity saturation; d) declining milling rates; e) pest and disease infestation; and f) abnormal weather such as the El Niño drought of 1997/98. A number of initiatives are needed to turn around rice production. First, better producer incentives are needed. Some element of "shadow price correcting" tariffs and income support may be needed. Agro-input subsidies, for the most part, are counterproductive at this juncture. Second, much more emphasis on strategic rice research is needed to restock the rice technology shelf. With every year, Indonesia is lagging farther and farther behind in this area. Third, public-sector efforts to expand the land frontier must be continued. This implies an effort to complete existing irrigation systems and to open new areas for future development. Fourth, a reduction in post-harvest losses can be accomplished if mechanization is promoted outside of Java. Fifth, milling yields can be reduced if the very small (and technologically limited) rice mills are gradually culled from the rice-milling sector. Sixth, post-harvest losses can be reduced if mechanized harvesting and threshing become more widespread. Seventh, year-to-year production can be made more stable if there are better climate early warning systems, crop insurance programs and continued emphasis on IMP and other pest and disease-management technologies. Last, production also reduced as a result of the disincentive of a significant reduction in the rice to fertilizer price ratio to about 1.3 and, depression of farm-gate prices as a result of rice consumption subsidies.

The success of the production improvement strategy is predicated on policy and structural adjustments in the agriculture sector including policies on: rice pricing and imports, crop diversification and marketing, production input pricing, agricultural research and varietal improvement, and irrigation agronomy extension. Thus a complementary agriculture sector structural operation is needed. However, a reduced pace of irrigation and drainage scheme expansion concomitant with current fiscal realities is based on the premises of effective mitigation of irrigated land conversion, improved public irrigation management and timely maintenance of existing irrigation infrastructure. This strategy cannot succeed unless the fiscal sustainability of public irrigation is assured and the structural problem of deferred system maintenance is overcome.

Low Sector Management Efficacy

Management in DGWRD was focused mainly on budgeting for construction projects and project construction contract management. Contract management however focused on the tendering process, contract administration and payment: little attention was given by DGWRD to the quality assurance aspects of the contracting, namely, construction quality assurance and appropriate quality control of the finished works. Little management attention was also given to water resources management's basic data requirements, planning, programming and water-resources management processes. Consequently, weak management was a factor contributing to the poor performance of the sector in dealing with adverse development impacts, O&M management, increased flooding and decline of watersheds.

River-basin management. The Cisarua International Water Seminar in 1992, which focused on the water-resources development and management policy options and medium- and long-term strategies, emphasized nationwide river-basin management. DGWRD subsequently responded with

the creation of a Subdirectorate of Water Utilization and Planning. A decree on the formation of Provincial Water Management Committees (MPW Regulation 67/1993) and a 1994 DGWRD strategy paper facilitated Bank support of the Java Irrigation Improvement and Water Resources Management Project (JIWMP), Loan 3762-IND of 1994. Under JIWRMP, five pilot provincial river-basin management units (Balai PSDA) were to be established. The pilots included the establishment of Basin Water Management Committees (PPTPA). BWMU establishment was facilitated by the Ministry of Home Affairs Decree 79/96, which places Balai PSDA under provincial government control within the PWRS.[49] The basin-management policy is determined by a Provincial Water Management Committee (PTPA). It became DGWRD's intention to ultimately have a Balai PSDA and PPTPA for each of the 90 legally defined River Basin Territories (SWS) of Indonesia.

Thus the purpose of the JIWRMP pilot basin management component was the development of a provincial basin-management system, which could be replicated for all river basins in Java. This includes: Balai PSDA organization, data systems for water accounting and allocation, monitoring of water quality, flood control and river-infrastructural maintenance, and real-time management procedures. An important activity was the preparation of management guidelines (under DGWRD leadership) for the pilot basins in the following areas: public awareness, water-use-rights system and licensing, water allocation, water-service fees (WSF), river-infrastructural maintenance, and conjunctive management of surface water and groundwater. The WSF concept is based on water-service beneficiary payment of the O&M costs associated with supplying water services. In 1995/96, DGWRD undertook a CIDA-supported study to formulate a WSF concept and develop a methodology to determine basic fee tariffs. The diagnostic work was completed in August 1996 and was expected to be an input for the introduction of the WSF program under JIWMP.

Progress in provincial river-basin institution building was slow and ineffective. Guidelines for implementation of Water Service Fee tariffs, integrated groundwater management and river-water allocation needed for Balai PSDA operation were not forthcoming from DGWRD. The inability to apply these principles in the original pilot Balai PSDA stemmed from national policy lacunae, staffing difficulties related to the disincentives of assignment to a "nonconstruction" entity and low-grade levels for key positions; and lack of staff and financial resources of provincial governments. By 2000, with the exception of the Java provinces, Balai PSDA have not yet been established as structured units within the PWRS. In East Java, Balai PSDA have also been established within the Brantas river basin managed by PJT Brantas, thus leading to confusion as to functional responsibilities and lack of clarity between their regulatory and operational functions. In 1999, the pending regional decentralization legislation also introduced unresolved complications, such as an intention to make Balai PSDA responsible for irrigation schemes crossing district boundaries. Implementing the concept of IWRM will require much greater clarity of provincial government's water-resources management responsibilities and the organizational and financial provisions to implement them.

River-basin corporations. The two existing basin-management corporations, POJ and PJT Brantas, were established under separate Government Regulations (PP 42/90 and PP 5/90). POJ is based

[49]There are two existing public corporations for river-basin management operations under national government control, namely, Perum Jasa Tirta (PJT) in the Brantas basin of East Java and the Perum Otorita Jatiluhur (POJ) in the Citarum basin of West Java. This implies overlapping functional jurisdictions in these basins and thus the hierarchical roles of Balai PSDA and PPTPA needed clarification.

on the Tennessee Valley Authority (TVA) model while PJT Brantas follows the French river-basin organization model. Both are partially self-financing SOEs (*Perum*) with respect to bulk water supply and hydroelectric power sales to PDAMs and PLN. Investment and public services, such as flood control and water-quality monitoring, are subsidized by the government. Of the two, only PJT Brantas is a success as POJ has no provincial representation on its Board and is responsible for inadequately funded O&M of a large irrigation network down to the tertiary level. Because of the success of PJT Brantas and, because PP 5/90 allows for additional river-basin corporations to be established under the aegis and guidance of PJT Brantas, the government intends to establish four additional PJTs by Presidential Decree. These corporations would be in the economically developed and strategic basins of Bengwan-Solo, Jratunseluna and Serayu-Bogowonto in Central Java, and Jenneberang in South Sulawesi. However, the Presidential Decree was held in abeyance in 1999 due to the implications of the pending regional administration and state-revenue-sharing legislation as it was anticipated that the provinces would establish the new entities as Province-Owned Corporations (BUMD) instead of as SOEs under central government control.

Other issues, in addition to corporate structure and governance, that need to be reconsidered in setting up basin-management corporations under the new regional administration framework are: a) regional government representation and stakeholder involvement in corporate management boards, b) the role of the basin corporation as an executive agent of government (or "operator") and the mechanisms of its regulation by either the regional government (the Governor through Balai PSDA and a PPTPA) or central government (i.e., the Minister of Public Works through DGWRD), c) resolution of regulatory issues related to river-basin corporation authority to use water user and effluent discharge fees as sources of revenue, d) financing sources for corporate investment needs and the enabling legal structure for public-private joint ventures, e) government-asset transfer and asset-management issues (e.g., the source of amortization funding), f) resolution of corporate function and financing issues arising out of proposals that basin corporations should assume O&M responsibility for irrigation canals crossing district boundaries, g) handling of subsidies for corporate public service responsibilities, such as services for irrigation, water quality monitoring, wastewater treatment plants, flood control and watershed management, and h) management of municipal wastewater treatment facilities through a concession contract system.

Poor hydrological-data management. The sustainability of an accurate, reliable and easily accessible hydrological data has received inadequate institutional and organizational attention despite the external aid resources received over the past three decades.[50] There was no subdirectorate for hydrology in DGWRD, which would ensure that a suitable national hydrology program was realized. Although the need for such data is recognized for effective water-resources management by professional staff, the lack of management allocation of appropriate organizational, personnel and logistics resources for hydrographic data collection has led to poor performance in hydrology. This was also exacerbated by an unattractive personnel system for hydrology staff (cadre and emoluments) and inadequate attention to their development. This became particularly acute when the national hydrological responsibility was passed on to Provincial Hydrological Units (PHUs). Most of all,

[50]For example, consultants designing the proposed Jatigede dam in the Cimanuk basin of West Java found that the only reliable hydrological and sediment data that could be used for reservoir operation and spillway planning comprised a colonial period data series from 1920 to 1941. Obviously, this series is less relevant today as the watershed has subsequently become deforested and subject to severe erosion and its hydrological characteristics have changed.

reliance of routine hydrology expenditure on project funding, together with lack of appreciation of the importance of hydrology was the major factor resulting in the lack of resources for field work to update rating curves and undertake flood-discharge measurements.

Since the responsibility for hydrology was given to PHUs in 1994, DGWRD included a hydrology-program support for these units in the ADB-supported Capacity Building Project (CBP) and the IBRD-supported JIWMP. The CBP included hydromet network upgrading, equipment and vehicle procurement, improving data processing, staff training and general capacity building in eight Outer Island provinces (North Sumatra, South Sulawesi, Bali, NTB, Southeast Sulawesi, Irian Jaya, South Kalimantan and Maluku). CBP played a major role in strengthening national-hydrology management by developing a hydrology-strengthening plan that formulated national coordination, agency hydrology roles and a capacity-building program. It also strengthened the PHUs in its eight provinces and upgraded/constructed about 600 gauging stations.

Under the JIWMP program, the PHU units in the four Java provinces were assisted during 1996-2002 to improve hydrology through network improvement, staff training and data-processing software. The project design did not address institutional, personnel and organizational issues in general and the problems of appropriate staffing and logistics funding, including provision of field vehicles, in particular. Rather these aspects benefited from the developments under CBP. In addition, JIWMP pioneered the concept of shifting the roles of hydrology O&M from the PHUs in Java to the various Balai PSDA in each SWS. This shifted the hydrology from a project mode under the PHUs to a structural implementation and budgeting mode under the Balai PSDA. Thus through role-sharing arrangements, the poorly funded PHUs would shift to a technical-support and management-supervision role.

Poor water-quality management. In principle, PP 20/90 could have been an effective legal framework subject to rectification of the following:

- Resolution of extensive conflicts between MPWR 45/90 and rationalization of the plethora of other agencies (MPW, KLH, MoI, MoH, MoF, MoA, etc.) quadruplicating (or more) the same or similar functions. Different duties are carried out in different places: for example, some regions license and charge for abstractions, others do not. Water abstraction and wastewater discharge control activities, and skills have much in common while separate field operations scatter skilled manpower across many agencies, weakening implementation capacity. Many effluent discharge standards are also too lax and well below the standard of treatment that can be achieved with conventional technology. Furthermore, a single discharger may have to negotiate discharge conditions with four or five different agencies, which creates a situation that is open to confusion and even exploitation by an unscrupulous discharger.

- Standards of river-water quality, as opposed to discharge standards, are flawed providing no criteria such as BOD and COD for ambient water quality. Thus a good water-quality class can be assigned to a river reach unfit for uses such as domestic water supply.

- No regulatory control is provided for municipal effluent, the main source of water pollution in most developed basins having urban areas (e.g., complete removal of all industrial load in metropolitan Jakarta would make little difference to water quality).

- Provision of sufficient resources along with fair and effective enforcement to upstream polluters and downstream-impacted areas.

It is hard to see how water quality can be managed effectively without concentration of functions in a few agencies and without clear, simple and mandatory coordination arrangements.

One of the major problems facing water-quality management in the 1990s was also the very poor quality of stream-quality data processed by many small laboratories without adequate standardization and skilled manpower. A skeletal, national river-water-quality monitoring operated by IHE Bandung exists: however, it samples only 120 stations on nine rivers at frequencies ranging from 12 times down to twice a year. There was also no review of results, many of which were clearly incorrect, while in other cases, results may have indicated severe pollution that was not acted upon. In summary, water-quality monitoring was not reliable and suited to any form of mitigation or enforcement program without major legal, policy, managerial and organizational improvements.[51]

Too often, water-quality management (WQM) is interpreted as comprising monitoring and regulatory tasks only, although the development of an institutional arrangement for financing, construction and operation of urban wastewater disposal systems poses a greater challenge. Two regulatory approaches have been developing in Indonesia. Regulations on water-resources management include aspects of WQM, but insufficiently cover the full area of regulation. Regulations that emerge from environmental-management concerns tend to be more comprehensive, though weaker in identifying organizational arrangements powerful enough to enforce the regulations, and that promote integrated water management. WQM and water-pollution control have been carried out in an ineffective manner by spreading the very limited human and financial resources too thinly while neglecting municipal-pollution sources. There are a few exceptions, such as in the Brantas basin, where PJT Brantas assumes some of the responsibilities, and in Jakarta. International experience has shown that the optimal approach to WQM is at the level of river basins where priority setting can lead to investment optimization yielding the greatest overall benefits. Modalities and institutional improvements are needed, which provide for cost-effective water-quality management interventions that apply to municipal wastewater as well as sharing of the financial burden between polluters and wastewater-treatment beneficiaries. Clearly, structural reforms are needed to craft institutions to weigh the social and infrastructural costs involved in water-quality management and seek an affordable mix of investments, financial mechanisms and regulatory interventions to achieve a sustainable level of environmental water quality.

Poor planning and management information systems for decision support. Apart from the problems of reliable hydrological and water-quality data, there was no decision-support database in DGWRD. In 1998, it became apparent that in a key area such as irrigation, there was no repository of scheme maps and three different estimates of irrigated area, i.e., that of MPW, MoA and the Central Bureau of Statistics. The data source of any basin-planning study became adjustments or interpretations of the data of any previous studies in the basin. There is also no accessible database of abstraction licenses or any other licenses that have been issued under the law in any basin or province. There have been 16-18 attempts to set up databases by various agencies on a project basis, but all are

[51]David Young: "Water Resources Quality and Conservation Management." Technical Report No. 1, UNDP/FAO Study INS/90/024; Jakarta, November 1991.

defunct or lost. These databases used diverse software, formats and system configurations, which were not easily merged into a central database. The problem was that inadequate consideration had been given to the managerial and organizational aspects of a database for a management information system as this was considered to be a minor part of the sector's administration. The organizational framework and its various decrees that allocate roles and responsibilities made no provision for database and information needs. Consequently, under the ADB-supported Capacity Building Project a component was included to establish a national water-resources database in DGWRD for activities related to planning, programming, development, monitoring and O&M functions. In 2000, this component then became an effort to set up a central data warehouse in Jakarta that would serve as the core of a water-resources data-management system.

One purpose of the Balai PSDA was the establishment of a basic database for its basin. For the first time in 1998, the five pilot Balai PSDA established under JIWMP had maps showing their rivers, river and water-quality gauging stations, locations of key hydraulic and other infrastructure and areas prone to flooding. This system was expanded to other Balai PSDA established in Java in 2000. However, there is no viable water-accounting system for any basin as yet that can be used as a management tool for integrated water management and real-time water allocation: a major program of measurement structure rehabilitation and calibration still needs to be undertaken. Where Balai PSDA do monitor water quality, its results are not yet integrated into an organizational form for controlling water pollution. Needless to say, although in principle legislation does allow levying effluent charges, this was not implemented.

Ineffective WUAs and irrigation-management turnover. Under the Ministry of Home Affairs Regulation No.12 of 1992, WUAs are responsible for tertiary irrigation networks. The diffused ministerial responsibilities and lack of coordination for WUA formation and development greatly complicate this endeavor. WUAs have not been effective because of the absence of: a) irrigator water use rights, b) free choice in the cultivation of those crops perceived to be profitable, and c) reluctance of DGWRD to provide any incentives for WUA empowerment that confers authority concomitant with the responsibilities of a WUA. Until 1997, 36,712 WUAs were formed but only 7,112 of these are considered "active." Inadequate attention was given by irrigation agencies to WUA capacity-building and its involvement in design, investment decisions and contractor performance. Poor performance of existing WUAs arises from their legal definition as a social institution having irrigation responsibilities but little recognition of the need for them to be a socioeconomic corporate organization vested with autonomous authority of financial management and self-governance, i.e., the WUA is currently regarded as a water "user," and not as an "infrastructure and service manager."

The small-scheme management turnover program to WUAs had only achieved about one-third of its target, while the efficacy of these WUAs is questionable due to neglect of their development and a program of post-turnover support. Instead of empowering farmers, the original and innovative concepts of the system management turnover to WUAs under IOMP were used to justify more public funding for rehabilitation, and the program was reduced to turnover of schemes with an area less than 150 hectares. The central policy issue of scheme turnover arises from the IOMP concept of "Special Maintenance," i.e., that the government should rehabilitate scheme facilities to their original design capacity prior to turnover. This policy of ubiquitous government assistance creates negative incentives that militate against WUAs' assumption of management responsibility. A more effective policy would be to turn over schemes to WUAs a priori and then review rehabilitation needs with WUAs along with their equity contribution. In this manner, investment

decisions would be more transparent and beneficiaries would be involved as "owners" in determining design priorities and ensuring construction quality.

Ineffective irrigation management. The government's 1987 Irrigation Operations and Maintenance Policy (IOMP) was to have addressed the irrigation sustainability problem. However, IOMP failed since the institutional setting was not supportive or appropriate. No single agency has a mandate, responsibility or overall authority for IOMP's implementation under an overall legislative and administrative umbrella. Irrigation agencies at the central and provincial level are set up to execute civil works and not service-oriented, institutional-development tasks. Under Presidential Instruction No.2 of 1984 on the "Development of the Farmer Water User Associations," three separate agencies have a mandate for establishing WUAs: the Directorate General for Water Resources Development (DGWRD) in the Ministry of Public Works (MPW), Directorate General for Regional Development (BANGDA) in the Ministry of Home Affairs (MOHA) and the Ministry of Agriculture (MOA). Similarly, the Directorate General of Public Administration and Regional Autonomy (PUOD) in MOHA is responsible for the fee portion of ISF while the provincial government irrigation agencies are responsible for the related improved irrigation services. The proliferation of agencies without clear mandates and accountability make coordination difficult. DGWRD and other government agencies were not set up to support IOMP's institutional development programs. Fractured responsibility and authority contributed to IOMP's discouraging results. At the central level, institutional development, planning and guidance were in one office and implementation in another: consequently, the two offices may or may not have been able to coordinate their activities. At the provincial level, WUA development offices were in one stream of administration and funding while WUA training and coordination programs were in a completely different administration and funding framework. Most of all, institutional problems were regarded as training and coordination deficiencies, whereas the real problem was the lack of addressing serious and insidious structural problems.

Major weaknesses in irrigation-development projects. A 1993 ADB evaluation of 15 completed irrigation projects[52] indicated a "number of critical areas that require special attention in the design and preparation of future irrigation projects," namely:

- *Lower actual command areas and cropping intensities in completed schemes than was projected at appraisal.* The design of projects is often done without sufficient and accurate field information, especially in the Outer Islands. Information on soil and water resources is not accurate: e.g., actual river flows tend to be lower than design estimates resulting in smaller service areas than those designed and developed. In some cases, soils are not suited to paddy cultivation, while in others, farmers prefer to cultivate tree crops albeit that designs were based on the assumption of rice cultivation.

- *Delays in land development and tertiary development.* Prior to 1994, land development was directed by MoA based on credit to farmers. Since 1994, land development has been under MPW and farmers' lands are developed free of cost by the government. However, progress is slow due to constraints related to low rice profitability, unsuitable land topography and insufficient water for rice.

[52]Consortium for International Development: *Assessment of options for sustainable irrigation in Indonesia*: Volume Two, Final Draft Main Report, ADB TA 2679-INO, August 28, 1998.

- *Inadequate O&M of completed facilities.* Although the development and management sides were split between the central and provincial governments, in practice, the cycle of deferred maintenance persisted and was exacerbated by reduction of central O&M funding without a concomitant contribution by local governments.

- *Insufficient participation of beneficiary farmers in the design, implementation and management of irrigation systems.* The top-down centralized approach to project preparation, design and implementation was not conducive to local considerations of beneficiary involvement. Central construction targets and control of funds left local government agencies with a marginal role and consequently, little managerial and staff incentive.

- *A need for establishment of reliable benefit monitoring systems.* There was no systemic time-series information on irrigation performance in the diverse physical and socioeconomic settings of Indonesia. The reason for not including performance monitoring and evaluation in irrigation programs was that DGWRD functioned on a "project" basis rather than on a planned program agenda. DGWRD's Directorate of Planning spent most of its time on budgeting rather than on program planning as the system forced it to ensure that programs could be funded in some manner under some project or other.

- *Poor construction quality.* The separation of responsibility for development and management between the Center and the provinces leads to low construction quality as the former bears no responsibility for the latter's maintenance problems.

- *Watershed management issues, such as sedimentation and low flow resulting from catchment degradation.*

- *Inadequate integrated agricultural support for irrigated areas.*

Poor management quality assurance and orientation. A major reason for poor sector performance lies in poor management quality assurance and its construction orientation. Although the need for water-resources management as opposed to public works construction was realized in the late 1980s and early 1990s, the management system and culture remained focused on project programming and budgeting and the execution of works. Even in this area, there remained much to be desired in terms of construction quality assurance, proper handing over of works, etc., as MPW became caught up in the general atmosphere of personal enrichment prevailing in Indonesia under the New Order. Accordingly, whatever public service orientation that had existed earlier was lost. In this bureaucratic climate, there was no management accountability and, certainly little interest in water-resources management activities that did not involve construction contracts. This attitude prevailed from management to operational staff.

Poor Fiscal Sustainability

Unsustainable irrigation O&M. Ineffective management of system maintenance is related to the way in which O&M activities are financed and implemented. Since O&M funding support is based

on "area" under government control, there is every incentive to maximize central funding support by maximizing this "area" to include village schemes, and minimize the actual management turnover of small schemes to WUAs. In 1998, O&M funding was based on "support" of over 6.3 million hectares of irrigation and swamp schemes. Thus about 1.7 million hectares of village irrigation networks are regarded as government supported. Periodic rehabilitation is preferred over routine maintenance by cash-short provincial governments: consequently, they do not allocate sufficient funds for maintenance as they can always depend on the central government to step in with externally funded rehabilitation projects. A World Bank in-house study of irrigation investment expenditures concluded in 1997 that the de facto provincial deferred maintenance culture has led to at least one-third of the 3 million hectares of government designed irrigation schemes being rehabilitated twice on average in the last 25 years. Apart from production losses, deferred maintenance results in scheme rehabilitation investment that is 6-7 times higher in present-value terms than that required if maintenance were to have been satisfactorily undertaken.

Despite the preservation of O&M funding in real terms since 1987, allocated funds are used primarily for provincial irrigation agency staff and their activities, while whatever remains (15-40%) is generally used for urgent repairs needed to ensure water delivery elsewhere, or used for minor civil works. Since 1997, and especially under the current fiscal situation, O&M funding has been provided to provinces as part of the general provincial block grant transfer mechanism: this has resulted in provincial governments allocating even less resources to O&M than expected, based on the central government's block grant budgeting assumptions. Due to rupiah devaluation, the value of the budgeted O&M subsidy has decreased from about US$80 million in April 1997 to a reported expenditure of about US$15-20 million in 1998/99. Unfortunately, one of the major analytical problems in reviewing O&M budgets is lack of data: the budget allocations are known, but data on how the money is actually spent and what percentage is actually used for maintenance remain unknown in general.

The ISF failure. At their peak in 1994–95, national ISF collections covered less than 2 percent of O&M expenditures, whereas the ISF programs in South Sulawesi, West Java, and East Java at one time or another were supplying about 10 percent of the provincial O&M budgets. While the fiscal goal of reducing dependence on central government O&M grants was a clear failure, the program did remarkably well given that it involved collecting money from farmers in exchange for promised services. A climate of enthusiasm was created, but because of the intractable procedures of the Directorate General of Public Administration and Regional Autonomy (DGPUOD) and less-than-perfect cooperation from DGWRD/Dinas, the ISF program eventually became dysfunctional and farmers stopped paying, especially where ISF was applied in one scheme but not in the adjacent areas. There is also no provision for provincial and district agency accountability for supply and maintenance services to irrigators: irrigation services have not improved in return for ISF payments and consequently, farmers perceive ISF as an additional tax which they refuse to pay. Thus, the ISF program has been very unsuccessful: instead of increasing beneficiary contributions and reducing the provincial government's fiscal burden, ISF revenues have been insignificant while O&M subsidies have increased.

O&M of river infrastructure. Prior to 2000, there was no program for O&M of major hydraulic or flood-control infrastructure. Because of the irrigation tradition, most weirs and major regulators, including the Kedung Ombo dam in Central Java, were regarded as irrigation structures and their O&M had to be accommodated from the irrigation O&M budget with no specific fiscal arrangements for their sustainability. Consequently, major structures and dams suffered from deferred maintenance

and, in some case, began to pose a safety hazard to the public. This led to the IBRD-supported Dam Safety Project (Loan 3742-IND) in 1994 to address this problem. An MPW regulation set up a Dam Safety Commission but no specific program for regular O&M funding: in fact, in many cases, the project simply rehabilitated dams to overcome deferred maintenance problems instead of focusing on hazard prevention.

Implementation of the "polluter pays" principle. As for municipal pollution control, UU 18/97 (on Retribusi Daerah) stipulates that a district government can charge a service fee or levy for the collection and treatment of municipal wastewater. This levy cannot be used for water-resources quality management by, for example, a basin corporation. In addition, law revision should allow holding a provincial and a district government accountable for failing pollution control, and applying sanctions under UU 23/97. The effluent discharge fee should be calculated as a function of discharged volume, a factor to reflect the river capacity, and factors that are chosen to arrive at a total fee that is high enough to stimulate the polluter to reduce his pollution. It is proposed to allow a basin-management corporation to collect this fee and use it for administrative and monitoring expenses, and for general water-quality management.

Low Level of Economic Efficiency

Lack of economic selection criteria. Economic efficiency is not a consideration in the investment selection and the use of scarce capital resources. Only donors and multilateral lending agencies use economic criteria in the selection of externally aided projects: MPW is basically indifferent to these considerations as long as there is something to construct and for which there is a political or social demand. Given the deferred maintenance culture and lack of emphasis in construction quality control, the investment devoted to premature rehabilitation is excessive, while new projects are often not completed due to lack of water and inadequate funding. The issue of economic opportunity costs caused by adverse social and physical impacts is generally not accounted for in project selection.

Poor sector-investment programming. Even when the Indonesian economy was growing at 7 percent per annum, the bulk of water-resources investments were based on reliance on external aid sources. In 1992, the World Bank found that investment in water supply and sanitation needed to be doubled annually from 0.2 percent of GDP to about 0.4 percent of GDP.[53] The advent of the economic crisis has drastically reduced the amount of available capital. It also requires increasing reliance on regulatory and financial institutions for sustainable and effective management of infrastructure and water use. Given the investment constraints following the fiscal crisis, it is relevant to ask: a) whether a strategic reordering of priorities for urban and irrigation is needed at the policy and resource-allocation level, and b) whether there is an appropriate institution that can resolve the politico-economic issues related to a programmatic sector-investment policy revision. Furthermore, urban competition for water requires the public's recognition of water as an economic resource.

[53]By comparison, despite the higher economic value of water in nonagricultural uses (which are 3 to 250 times higher), investments in irrigation (excluding flood control) circa 1992 constituted about 0.4 percent of the GDP, i.e., about twice that of urban areas.

Existing sectoral investment decision-making institutions, as well as their data and decision-support systems, are not up to future sector challenges: even in MPW, there is no functional strategic investment planning unit to set priorities between water-resources development, irrigation and urban water and wastewater-disposal needs.

Poor Governance

Good governance and stakeholder participation not considered a policy issue. Good and transparent governance was not a policy consideration in sector management. Stakeholder participation in decision making was explicitly not provided for: it was assumed that government agency officials would take care of their agency's constituents in a partisan manner in committees such as a District Irrigation Committee or a Basin Water Resources Coordination Committee (PPTPA). No institutionalized public forum exists for receiving stakeholder views and the decisions lack transparency. This is particularly true for Basin Development Plans for which no institutional framework exists for their review and formal adoption. For example, a water-resources development and management plan of national consequence, such as the Master Plan for Water Supply to the Jakarta metropolitan area (Jabotabek), has never been discussed in a public forum and no authority or commission has been set up to deal with coordinated investment implementation or reconciliation of public and private interests.[54] While such national government plans, which could be detrimental to local stakeholder interests, may have been possible in Indonesia prior to May 1998, it is unlikely that under a more pluralistic and open government such plans could pass without regional consultation. Reconciliation of these issues can only derive from an intergovernmental institution with private stakeholder representation with respect to policy and coordination at the highest levels of government, such as a National Apex Body (e.g., Water Council) and Provincial and Basin Water Regulation Committees.

Participation under UU 11/74 is defined as a requirement to pay for water services and not public participation in the decision-making process. However, payment for water services did not apply to irrigation water supply while fees for other water uses did not consider cross-subsidization, or any other analytical equity aspect of water tariffs. Modern aspects of good governance practice such as gender and equitable involuntary land acquisition were not policy issues being considered. Gender considerations did not appear in project planning and programs while MPW did not have an explicit policy for equitable land acquisition and resettlement or for the rights of indigenous peoples. The existing law (UU 11/74) also has no explicit mechanisms for conflict resolution that would ensure fair arbitration of conflicts of interest or resolution of complaints against the government's water-services delivery.

[54]Major water-allocation adjustments would be required in the Citarum basin of West Java to facilitate the massive planned water transfer to Jabotabek from the Jatiluhur reservoir, which supplies irrigation schemes totaling several hundred thousand hectares. The basin transfer recommendations of the Bank-supported Jabotabek study have never been subject to the test of public consultation or discussion in the West Java Provincial Water Regulation Committee.

Overall Assessment of Sector Structural and Institutional Performance

The above review indicates that, by 1998, Indonesia's water-resources sector was in dire need of legal and policy reform as well as administrative structural adjustment, if overall sector performance was to improve in order to meet current and emerging future challenges. Although there was a workable legal framework, it was not implemented by policies and a management system that would ensure better overall performance, improve water conservation and government water-related services and ensure investment sustainability for irrigation in particular. These deficiencies arose out of sector management's fixation with implementation of investment projects as a panacea for all problems, issues and challenges. Water resources and irrigation management program activities were downgraded because they did not offer the same "rent-seeking" and salary augmentation possibilities afforded by investment projects.

Viewed with this in mind, it is easier to understand why sector-management policies exhibited the following deficiencies:

- Agency construction bias: (e.g., neglect of nonstructural options, particularly for flood control).
- Failure of the 1987 Irrigation "O&M Policy": (Irrigation Service Fee not paid, village-based unempowered WUAs defunct and, management transfer to schemes below 500 hectares ineffective).
- No National Water Quality Monitoring and Comprehensive Water Pollution Control Program.
- Ineffective Intergovernmental Sector Agency Coordination.
- Focus on water-use management, not IWRM.
- No water-use rights system and poor protection of traditional water usufruct rights (e.g., traditional irrigation rights in the Ombilin basin of West Sumatra and neglect of interbasin transfer impacts).
- No policy of conjunctive allocation and use of groundwater and surface water.
- No service delivery orientation in Sector Agencies (except for the Brantas Basin Water Services Corporation with ISO 9000 certification).
- Deficient agency MIS (e.g., annual net irrigated area uncertain and poor scheme mapping).
- No policy for project social impact mitigation (land acquisition and resettlement, indigenous people).
- No commitment to environmental impact mitigation (e.g., million hectare swamp project).
- Poor coordination between food security policy and incentives for Productive Irrigated Agriculture.

- No trade-off between sewerage/effluent disposal needs and irrigation development.
- No policy for agency quality assurance and infrastructure asset management systems.
- Cost recovery policy not implemented (except for urban water utilities).

Evolution of the Water Sector Reform Initiative and Its Preparation

Realization of the Need for Water Resources and Irrigation Management Reforms

Evolution of a call for institutional reforms. The 1992 Cisrua International Seminar had some influence in developing a water resources and basin-management orientation in Indonesia. Indonesia started its second 25 years of development (PJP II: 1994-2019) in April 1994 which, inter alia, emphasizes the development of comprehensive, integrated and sustainable strategies for water-resources development and management. Immediate spin-offs of this strategy were: a) the elevation of water resources to the status of a separate sector, b) the establishment of a Bureau of Water Resources and Irrigation in the National Planning Agency (BAPPENAS), and c) a major reorganization of the Directorate General of Water Resources Development (DGWRD) in the Ministry of Public Works (MPW) and, a Directorate for Water Resources Management in 1955. Although the Directorate had little influence and resources, it formed the basis of the BWRM and BWRP components of the JIWMP.

Despite the creation of DGWRD, efficient, integrated and sustainable water-resources management has not been achieved, as intergovernmental coordination has been poor because of the absence of a national decision-making body for oversight of policy formulation and implementation, inter-sector coordination and aggregate sector management. The lack of a national water-sector intergovernmental coordination and conflict-resolution institutions of adequate authority has serious consequences for development sustainability. These institutional lacunae adversely affect the efficacy of economically efficient water allocation to subsectors, water-pollution control, environmental conservation and watershed management for river basins with large cities. This situation derives from fragmented ministerial mandates, overlapping subsector jurisdictions, lack of coordination and consequent conflicting interests. Key examples are: the fragmentation of groundwater and surface water management, and of water quantity and quality, and the approach to watershed management whereby responsibilities are divided between three ministries. The FAO water-policy studies had no practical influence on sector management but provided a framework that could be used.

The general water-resources policy and strategy guidelines for Repelita VI actually prescribe efficient and productive water utilization and preventing environmental degradation through spatial planning to optimize water-resources development. Nevertheless, the Bureau of Water Resources and Irrigation of BAPPENAS concluded that the implementation of these guidelines is deficient. It found that: a) policy reorientation away from agriculture has lagged behind investment in infrastructural development, b) there is no notable achievement in development of legal and institutional arrangements for water-resources allocation and management, c) water-quality and environmental degradation has become a serious development constraint, and d) lack of clear regulations and procedures cause the private-sector participation policy to remain nonoperational. Thus, for preparation of Repelita VII, the Bureau obtained a Ford Foundation grant to support a national forum for water-policy discussion. The participants were stakeholder government ministries and agencies, NGOs and private individuals. The leading members of the forum were middle-level officials interested in water-resources management per se; it would be fair to say that higher management did not intervene as the forum was regarded as an academic exercise unlikely to lead to any difficult-to-accept changes that would "rock the boat." This forum, consisting of 5 seminars and 13 discussion sessions, began on September 30, 1997 and was to terminate on February 9, 1999. The declared objective of the forum dialogue was to develop an "agenda for water-resources policy and program reform," which would be an input into the policy and strategy of Repelita VII.

Factors Generating the Proposal for Water Sector Reform in 1998

Impact of fiscal crisis and drought. The initiation of the Bappenas Water Resources Forum in late 1997 coincided with the East Asian fiscal crisis. The ensuing months led to the collapse of the Indonesian economy and a drop in the rupiah exchange rate by at least 75 percent. The collapse also caused large segments of the urban population to lose their jobs and drift into poverty. These conditions led to very strong demands from the IMF for fiscal and banking reforms that were supported by the donor Consultative Group for Indonesia (CGI). A program of structural adjustment was begun in response to Indonesia's compliance with the first of several IMF Letters of Intent. This included the first of several World Bank Structural Adjustment Loans that deepened the fiscal and banking reforms demanded by the IMF, and also included some policy reforms in environmental management. The latter included six new environmental regulations to implement UU 24/97, including an improved water-pollution-control regulation to replace PP 20/90. By December 1997, it became clear that, in addition to fiscal difficulties, Indonesia was severely affected by drought caused by an El Niño phenomenon. This drought led to major shortfalls in rice production and the need for very large rice imports that were a further burden on the economy.

The World Bank responded to the need for rice-import support by proposing an agriculture-sector adjustment loan[55] (ASAL) that would provide two or three hundred million dollars of fiscal support for such imports provided agricultural and water-resources-policy reforms are carried out. A program of water-sector reforms was included in the ASAL program because the World Bank had decided in late 1997 that no further support of the water-resources and irrigation sector was warranted unless a program of legal, policy and administrative reforms is successfully completed. It was clear that the ADB-supported DGWRD Capacity Building Project would not achieve its institutional objectives with respect to coordination and decision-support arrangements and that the World Bank's JIWMP was not achieving institutional objectives. Not one of the five pilot Balai PSDA had been established, the hydrology component was not contributing to an improvement in PHU performance, and the irrigation component remained focused on the construction of subprojects with clear indications of declining O&M funding as a result of the failure of IOMP 1987 programs.

The World Bank reform proposal. Based on the deliberations of the Bappenas Forum, the institutional component of ADB's DGWRD Capacity Building Project and the World Bank's policy objectives under JIWMP, the World Bank informed the Government of Indonesia in April 1998 that the proposed ASAL's water component should include policy reforms, which are the following:

- *Establishment of a national water resources council.* This requirement called for the issue of a Presidential Decree or, preferably a Government Law, establishing a National Water Resources Council structured as an interministerial Committee of Ministers assisted by a Technical Committee of the Directors-General. The Bank argued that the establishment of the National Water Council was vital to starting and managing a reform process in water resources leading to IWRM strategies, policies and institutions that: a) reflect financially

[55]A Sector Adjustment Loan (SECAL) provides a fixed amount of budget support to a government's Central Bank upon completion of an agreed set of reforms in a given sector. No funds are allocated in a SECAL for conventional projects or technical assistance. These reforms may be of a policy, legal, fiscal, regulatory or administrative nature (or a combination of all) and may be disbursed in one or more tranches upon completion of a set of reforms. There are no restrictions on the Borrower's use of the funds received except for certain uses such as weapons, drugs, etc. The basis of the loan is a Letter of Sector Policy from the government concerned whose reform commitments are organized into a Policy Matrix.

and environmentally sustainable national priorities in water allocation and conservation, land- and water-resources development and O&M of water infrastructure within a realistic fiscal and public expenditure framework, b) are consistent with the Indonesian administrative culture and its functional decentralization and coadministration policies and organizational hierarchies, and c) are based on greater stakeholder and beneficiary participation in management of decision making and cost sharing.

The Decree/law would set out Council functions that include: a) preparing and adopting a National Water Policy (NWP), b) preparing the strategic, organizational, financial and administrative coordination framework for implementation of the NWP, c) guiding the preparation of detailed regulatory and procedural guidelines to implement existing and proposed legislation needed to implement the NWP at all levels of government, d) managing the planning, programming and budgeting framework for approving strategic intergovernmental allocation of water resources-related investments and central coordination of integrated land- and water-resources management, and e) authority to review and recommend to the government revisions of the water-resources-related mandates and responsibilities of all ministries and their provincial and local government counterparts with the objective of serving the public interest by improving sector performance, cost-effectiveness and environmental outcomes.

- *Adoption of a national water policy and implementation action plan.* In order to signal implementation of, inter alia, PJP II and Repelita VII principles, the National Water Resources Council was to adopt the NWP within 3 months of its establishment. The NWP would essentially be similar to, albeit with modifications deemed necessary by the Council, the seven policies related to Water Utilization, Water Quality, Water Resources Development and Water Resources Management Structure and their related strategic objectives in Water Resources Management, Socioeconomics & Finance, and Environmental Management stated in the UNDP/FAO draft National Water Resources Policy Action Plan (1994-2000) prepared in 1992/93. The NWP document would also state the policy principles related to the nature of irrigation sector subsidies and Participatory Irrigation Management policy principles. The NWP should also contain a national policy on swamp development in relation to transmigration programs, integrated regional development and spatial planning policy, and national environmental and conservation policies.

- *Issue of key IWRM procedures and guidelines.* Notwithstanding the requirement to issue all administrative requirements for implementation of all existing legislation, the Council shall ensure that within 8 months of its establishment both national and provincial authorities will issue guidelines for integrated water resources and river-basin management based on key principles enunciated in national legislation and the NWP. These procedures should include: a) subsector water use rights and individual/project/urban water storage, abstraction and wastewater discharge licensing, b) policy on water service fees to be paid to river-basin management corporations and provincial basin water management units, by entities receiving bulk water supply or licensed to abstract water from streams (e.g., municipal PDAMs, aquaculture, irrigation schemes and licensed industrial enterprises), or those making nonconsumptive beneficial use of water (e.g., PLN hydroelectric plants), c) inter-sectoral water allocation and reallocation guidelines including the provision for environmental flow requirements, d) integration of groundwater and surface water management, e) allocation of national and provincial responsibilities for river-water-quality

monitoring and management, f) charging of pollution/wastewater discharge fees by river-basin management corporations and/or other authorities for licensed discharges into rivers, and g) allocation of responsibilities for maintenance of key river structures and flood-control management.

- *Implement integrated river basin management in all developed river-basin territories by the establishment of basin water management committees (PPTPA), provincial basin water-management units (Balai PSDA) or Basin Management Corporations (Perum) (for key river basins).* Several river-basin territories are regarded as being of strategic national importance because of the high degree of their economic development (e.g., Brantas, Citarum, Cimanuk, Jratunseluna, Solo, etc.). It was noted that a successful river-basin corporation had already been established in the Brantas basin but that all its powers have not yet been fully implemented (e.g., wastewater discharge charges). A high-powered governmental task force comprising representatives of the Central Government, the West Java Government and Perum Otorita Jatiluhur (POJ), should review the institutional/ organizational framework of the poorly functioning POJ in the light of the Brantas Corporation (PJT) and the provisions of the MOHA Decree of 1996 giving provincial governments river-basin management powers. This governmental task force should be established within 2 months of ARSAL signature. Similar task forces were to be established for the Jratunseluna basin and for water-resources management in the greater Jakarta metropolitan area (JABOTABEK). In this context, the provincial regulations (PERDA) establishing provincial basin water-management units under the MOHA Decree of 1996 are to be issued for Central Java and Yogyakarta. Balai PSDA and PPTPA should be established within the PWRS structure for all basins in order of complexity, priority and available funding.

- *Adopt a participative irrigation management (PIM) policy for public irrigation schemes based on revision of the 1987 irrigation O&M policy (IOMP).* Because of declining sustainability of irrigation schemes and deferred maintenance policies, the National Water Council should recommend a PIM policy to the government within 6 months of its establishment. This policy should be based on at least the following principles:

  a. Irrigators are to be wholly responsible for O&M and future renewal of all minor canal networks (canals and structures) within a territorial jurisdiction defined lying behind a secondary supply gate or regulator (provided that the size of such works are within the financial, operational and regulatory scope of local community resources and assisted by the government if and when necessary).

  b. Rural empowerment for the discharge of community PIM responsibilities are through: i) the formation of a legally registered and democratically elected (by landholders) WUA for each feasible canal jurisdiction, ii) the federation of WUAs into an apex organization to manage secondary canals serving several WUAs, and iii) representation of WUA federations on scheme-level management committee to jointly manage O&M and rehabilitation of large schemes together with provincial and/or kabupaten agencies.

  c. Appropriate sharing of the bulk water-supply costs of the scheme by the payment of an Irrigation Service Fee on a per hectare basis by all irrigators (whether landholders

or not) through WUAs to the PWRS's basin water-management organization or kabupaten-level irrigation agency in return for a reliable irrigation service by the PWRS to the scheme (determined by a provincial basin water-management unit on the basis of annual/seasonal water availability and due consideration of downstream consumptive and conservation use and quality needs).

d. Earmarking of GOI INPRES funds for only O&M of the main system operated by the government and change of the O&M unit cost from a per hectare of irrigated area basis to the fixed and recurrent costs per kilometer of size categories of canal and headworks.

e. Formation of legalized WUAs, turnover of canal networks and payment of Irrigation Service Fees by irrigators shall take place under appropriate legislation or regulation simultaneously throughout the country without prior rehabilitation of public irrigation networks.

f. Rehabilitation of canal networks under the jurisdiction of WUAs, which suffer from past neglect through deferred maintenance by the government will be undertaken by government funding after turnover, using an appropriate government rehabilitation fund whose i) deployment will be jointly determined by WUA organizations and irrigation authorities on the basis of priorities and available funding, and ii) rehabilitation works will be jointly supervised by irrigation authorities and WUA organizations.

- *Immediately cease all additional public expenditure for expansion of the one million hectare swamp scheme in Kalimantan until further notice.* This expensive and potentially very ineffective project was devoid of a proper feasibility study and engineering designs based on soil and other field investigations and on consideration of the whole complex of its adverse environmental and social impacts. The project had resulted in an international outcry which embarrassed both the government and the international donors underwriting Indonesia's financial and fiscal reconstruction since external aid creates the water sector financial fungibility, which enabled the government to pursue the Project. Past investments for this project were funded off-budget (e.g., from the Reforestation Fund and Presidential funds) and its overall cost, inclusive of its transmigration and environmental mitigation expenditures, has not been determined. The government should first undertake the necessary study and assessment (to be reviewed by a high-level national panel with foreign experts) with the objective of repairing cumulative damage where possible and only consolidating the utilization of sunk investments in an economically and environmentally sustainable manner.

  The Bank claimed that it was not necessary to undertake large and environmentally unsustainable investments in swamp development for the next 10 or 20 years as the forecast rice demand over the next 20 to 30 years could be met by raising the productivity of existing irrigation schemes. This may be achieved by a) improvements in crop yield and cropping intensity in off-Java areas with due allowance for conversion of land to urban uses, and b) completion of distribution networks on 718,500 hectares outside Java (e.g., nonfunctional canals, main canals incomplete or tertiary networks incomplete). In order to ensure rice self-sufficiency, donors would support the completion of the above irrigation schemes and programs to raise irrigation efficiency and rice output in off-Java public irrigation schemes provided that such investments are undertaken within the context of a revised IOMP suited to the socioeconomic realities of the Outer Islands.

- *Issue of all regulations to implement the water pollution mitigation provisions of Law 23/97.* This requirement was originally not elaborated for the ASAL as it was one of the many conditions of the World Bank's first structural adjustment loan. However, when it became apparent that the new water pollution control regulation did neither specify the treatment of urban wastewater—a major cause of pollution—nor contain specific provisions for mining effluents, the World bank requested that its preparation be removed from the IMF program and be placed under the water component of the ASAL. It was argued that close supervision by water-resources specialists would result in a product that addressed water-pollution control in a more responsible manner.

These points of the World Bank were accepted by Bappenas and referred to its Bureau of Water Resources with an instruction to prepare a memorandum for submission to the Indonesian Cabinet, while the Deputy Chairman responsible for agricultural policy was told to review the ASAL agricultural policy reforms. The Bureau accepted the Bank's proposals as they were in line with the conclusions reached during the deliberations of its Water Resources Forum. The Bureau however added the need to develop a better institutional framework for decision-support data. In parallel, the "Eight Points" were also presented to the new Minister of Public Works and the Director General of DGWRD who were told that their acceptance was a Bank condition for further support of the water-resources sector. The proposals were accepted in principle except for the requirement to cease further work on the Million Hectare Swamp Project albeit a way out was being sought. It was agreed that before accepting this requirement, a Bank expert would visit the project site to ascertain whether the scheme was sound or not. Following this visit in early May 1998, the expert's field report to the Minister indicated major technical, environmental, economic and social issues affecting the desirability and sustainability of the project. The report was provided to an interministerial meeting held in July 1998 and chaired by the Minister of Planning. This meeting decided against further governmental implementation of the Million Hectare Swamp Project; consequently, cessation of the project was adopted as a reform requirement.

World Bank sector strategy. These points of the World Bank constituted the first element of a broader strategy of reform implementation. The other elements were:

- *Involvement of the donor community.* From the outset, the Bank tried to interest and involve the key multilateral and bilateral donors (EU, ADB, OECF, CIDA, etc.) in the reform agenda effort with the ultimate objective of establishing an informal CGI for the sector. This was to be done by calling meetings of the donor community and briefing them on the agenda and its progress. This initiative was welcomed as all donors—particularly ADB—had an interest in seeing better performance in the sector, which had received so much financial support but with rather disappointing policy and institutional results. The Bank informed the donor community of its decision to make its future support conditional on successful completion of the reform agenda.

- *Reform follow-up program.* Following successful completion of the reform agenda, the World Bank planned to interest the Government of Indonesia and the donor community in a follow-up program to strengthen the new water-resources and irrigation-management institutions. Apart from the investment to overcome the ravages of deferred maintenance, the program would focus on agency and farmer-organization capacity building, improving agency accountability and quality assurance and, developing cost-recovery arrangements

to ensure the sustainability of investments. It assumed that a National Water Management Program could be developed and supported in different provinces by each donor using a common approach.

- *Piloting reformed institutions.* The World Bank decided to use its JIWMP project to pilot reforms and enable agencies to experiment with different institutional approaches. The project's basin planning and management components were pilot initiatives so that their institutional aspects could be easily emphasized. With respect to irrigation, although there was provision for support for WUAs, no attempt had been made to set up WUA federations. Consultation with farmers and WUA members was made a prerequisite for investment in scheme rehabilitation, and modalities were sought by which WUA federations could be established.

- *Development of national-sector policy-formulation capacity.* As a matter of principle, the World Bank decided against the use of international technical assistance for drafting of any legislation needed for the reforms. For years, sector agencies had relied on international consultants, but did not really read their documents as these were written in English. It was felt that, even if it would be at the expense of quality, only national consultants and government officials would be used to formulate the detailed reform concepts and documentation in order to develop their capability. Thus, it was hoped, that each reform developed by the Task Force would be truly "owned" by the government as its staff had discussed them fully.

Politico-economic reform. At the same time in May-June 1998, following the political upheaval and downfall of President Suharto and the ascension of President Habibie, a new era of reform began. What had been unthinkable before seemed possible as a whole society seemed to want something better. Accordingly, the concept of a basic water-sector reform program seemed logical and was not opposed in principle. Talk had begun of decentralized government, and government officials began to think about accommodating new concepts of regional autonomy. This reached its peak in October 1998 with the new MPR decrees that set out a new political economic vision to which the DPR was required to address. The October 1998 decrees of the People's Consultative Assembly on Development Reform Policy, Political Economy and Organization of Regional Autonomy set the stage for a politico-economic reformation in Indonesia.

The goals of this declared reformation are administrative decentralization and State revenue-sharing, local government and community empowerment, government transparency and democracy. Relevant political-economic reformation guiding principles were: a) regional development shall be organized within a system of regional autonomy, just allocation of national resources and balanced finance between central and regional governments, b) management of natural resources shall be implemented effectively and transparently by giving opportunities to small and medium enterprises and cooperatives, c) the regional government has the authority to manage national resources and is responsible for maintaining environmental conservation, d) small enterprises of low capital should be given priority and assisted in expanding their economic interests so as to be autonomous, especially in the utilization of natural resources and access to capital resources, e) management and utilization of land and other natural resources shall be implemented justly by abolishing all forms of centralization of powers and ownership, and f) land, as the basis for agribusiness, shall first be used for the growth of publicly supported agriculture capable of involving and giving greatest prosperity to small and medium enterprises and cooperatives.

Drafting of legislation was begun to decentralize the government and introduce a new system of intergovernmental fiscal relations suitable for public administration based on regional autonomy. This means that the central government would shift to an enabling role and share about 50 percent of its revenue with regional and local governments using a block grant principle based on criteria, such as population, regional contribution to GDP and the like. This would limit the central government's role to national matters of defense, monetary policy, etc. The provinces would have authority over matters that transcend district boundaries (e.g., public works, communications, transport, mining, forestry, estates and strategic regional policy). Local governments will be able to access funds from the national budget, donors, private sector and from the local revenue base, and allocate them in accordance with public preferences. Both provincial and district governments would be free to restructure their sectoral government departments (dinas) and transfer responsibilities to provincial or local government enterprises, private enterprises or public-private partnerships. Thus, the government announced its intention to reform regional government along the following lines: a) retain a lean central-government apparatus in Jakarta dealing only with national government functions, revenue sharing and regulation of regional or local governments as an "Enabler" and not a "Provider" (i.e., seeking greater public-private financial partnerships at the local level), b) devolution of resource allocation and implementation power to district and local governments, and c) reorganization of a provincial-level government (Tk. I) apparatus to serve the district (Tk. II) level and deal mainly with extra-jurisdictional functions and issues.

Macro-economic and public expenditure reforms. In order to mitigate the ill-effects of the fiscal crisis, the new government began implementing a four-pronged strategy of policy and institutional reforms based on: a) management of the macro-economy, b) financial and corporate-sector restructuring, c) protection for the poor and preservation of human assets, and d) reform of economic institutions. Specific strategies and programs under this agenda were progressively refined throughout 1998 in collaboration with the World Bank, the IMF, ADB and bilateral donor agencies to tailor new policy initiatives to evolving economic and social difficulties. The reform agenda was supported by World Bank-policy reform support loans. With a view to increase the transparency and efficiency of public expenditures, a Government-Bank Public Expenditure Review was completed and presented to the CGI meeting in Paris in July 1998. The vast majority of the report's recommendations were included in the revised budget approved by Parliament in July 1998. The government recognized the necessity of making fundamental shifts in expenditure priorities and began to do so in the revised 1998/99 budget. Some of the priority shifts were directed at mitigating the immediate effects of the crisis, such as the employment creation programs. Others represent the beginning of a reallocation of spending toward longer-term priorities, such as improving quality and access to health and education for the poor. In the short term, these shifts entailed deferring or canceling projects and focusing on maintenance. In the medium term this involved reassessing priorities in infrastructure and other sectors.

Recommendations of the ADB-supported sustainable irrigation study. The draft final report of the ADB-supported study "Assessment of Options for Sustainable Irrigation Development in Indonesia" was published in August 1998. Its recommendations with respect to irrigation management reform were almost identical to those outlined in the irrigation components of the World Bank's "Eight Points." The reformed IOMP proposed included the following programs as follows:

A. *Development of sustainable WUAs and WUA federations.* The goal of this program would be improved O&M performance and increased farmer income, as a string WUA was found by

the study to be a good indicator for improved O&M performance. The strategies recommended were:

1. Empowering WUAs including authority to collect management fees to be used for O&M.
2. Facilitating WUA income-generating activities after becoming proficient in O&M.
3. Developing WUA demand-based assistance programs including bookkeeping and legalization (regarded as optional, based on WUA desires).
4. Developing WUA federations as WUAs of 50-150 hectares was not a viable management entity that could recruit professional staff.
5. Encouraging region-specific initiatives that incorporate local traditions into WUA development programs.

B. *Accelerated and revised irrigation-management turnover programs.* To achieve the goal of farmer-based development and self-reliance, the following strategies/reforms were proposed:

1. Changing the DGWRD scheme rehabilitation policy by requiring turnover to empowered WUAs prior to system rehabilitation (with physical improvements, based on farmers' requests).
2. Removal of size limitation to 500 hectares for schemes eligible for turnover and inclusion of larger schemes with initial focus on turnover of secondary-canal networks.
3. Introduction of some form of cost-sharing arrangement whereby WUAs would be required to provide an equity contribution for physical improvements.
4. Changing the post-turnover role of the government from no involvement to a supporting role as trainers and advisors to the newly turned-over WUA-managed schemes.

C. *Implement a revised ISF program.* The strategies upon which the program is based are the following:

1. Simplify ISF organization and procedures so that WUAs would collect the ISF.
2. Minimize the role of government and maximize the executive role of WUA federations.
3. Establish a clear link between Providers and Consumers of Service so that ISF is used exclusively for the scheme it originates from.

D. Strengthen O&M institutions for improved O&M. The key elements for improved O&M are:

1. Develop institutional incentives to make O&M activity attractive by allowing provincial agencies to also undertake construction. Institutional incentives must be sought to make agency O&M activity attractive and creating financial incentives to make deferred maintenance financially unattractive.

2. Create arrangements for agency accountability for irrigation services.

3. Encourage WUA authority and obligations to raise revenue and manage irrigation networks. The proposed program should accelerate turnover of irrigation schemes to WUAs while simultaneously making it obligatory for government agencies to provide technical support.

4. Reallocate deployment of irrigation O&M budgets. Over 60 percent of available budgets are used for operations and the remainder for construction. The latter percentage has to be largely increased while also transferring funds directly to WUAs.

5. Improve monitoring and evaluation (M&E) of irrigation O&M performance. The M&E system needs to be changed from a "before and after project" approach to viable and relevant time series of performance indicators relevant to both government agencies and WUAs.

No sector-wide discussion was held of the above recommendations. However, their issue coincided with the discussions of irrigation-management reform policy and thus served to support the World Bank and Bappenas Forum proposals.

Sector reform based on political will? It is important at this juncture to reflect why the World Bank's reform program was accepted as the reasons for this acceptance and have a bearing on the subsequent preparation and implementation of the reforms. At the technical level, there was a clear desire for an improved policy and institutional framework on the part of the middle-level officials in Bappenas and DGWRD who were active in the Water Resources Forum. Since there were no new concepts except for possibly a more comprehensive approach to participatory irrigation management, there was no resistance from the officials who were asked to prepare a memo to the Cabinet. Because of the fiscal crisis and El Niño, key Bappenas policymakers were no doubt seduced by the fiscal-support concept and less interested in the specific sector-reform proposals. MPW on the other hand, while accepting the need for some reforms that were in line with general policies of Repelita VI, probably assumed that those reforms conflicting with its bureaucratic interests could be suitably watered down by the time final commitments were to be made and the reforms completed. As will be seen later, this dichotomy between those less influential desiring reform and the decision makers more interested in disbursement and fiscal support continues to affect the reform process to this day.

The WATSAL Preparation Process (1998-1999)

Elaboration of the reform agenda by a Government Task Force. An informal task force was initially established by Bappenas to review and elaborate the "Eight Point" agenda (from which the Million Hectare Swamp Project was removed as its funding was discontinued in July 1998). Working with a World Bank mission team as facilitators, the agenda was developed into an initial Policy Matrix. This matrix was formally presented to the government agencies and donor representatives in October 1998 at a meeting chaired by the Minister of Planning. The initial Policy Matrix was adopted at this meeting and Bappenas proceeded to establish a formal task force for its finalization. A Steering Committee of Directors General chaired by the Bappenas Deputy Chairman, Infrastructure was appointed by the Minister of Planning. A Secretariat, headed by the Chief of the Bappenas Water Resources Bureau and a 42 member task force, representing all concerned government agencies,

was appointed by the Bappenas Deputy Chairman, Infrastructure. The government task force included two NGO representatives, an innovation previously unimagined in Indonesia.

By October 1998, it became clear to the World Bank that the agricultural policy aspects of the ASAL were receiving inadequate support and that their development would hold back the progress being made with the water-resources component. Consequently, the Bank decided to drop the ASAL concept and support a Water Resources Sector Adjustment Loan (WATSAL) that would be based on an improved Policy Matrix being developed by the task force. The task force itself became known as the WATSAL Task Force.

Interministerial Coordination Committee. Although the Task Force Steering Committee appointed by the Minister of Planning represented a high-level of the government, it was felt by the Bank that sector reforms and fiscal support should have Cabinet-level exposure as several issues in the Policy Matrix would require interministerial discussion. It was proposed that the first completed reform should be the establishment of an interministerial committee that would serve as an embryo National Water Council. Therefore, the government established a nine-member ministerial coordination team (Tim Koordinasi) for "Policies on efficient river utilization and river basin sustainability" under Presidential Decree No. 9 of January 14, 1999. As stipulated in this Decree, Tim Koordinasi is directed by the Government's Coordinating Ministers and the Minister of National Planning. The Presidential Decree specifies Tim Koordinasi's involvement in the planning and direction of land- and water-resources management of economic, conservation and environmental activities within river basins according to national reformation principles. The Tim Koordinasi's duties are to be carried out on the basis of the following key principles: a) management based on beneficial and sustainable principles for the welfare of the nation and its living environment, b) consideration of habitat conservation and environmental sustainability needs for all natural resources and living creatures within specified rules related to planned spatial structuring and environmental functions, c) where possible, utilization of corporate basin-management organizations, such as State-Owned Enterprises (SOEs), Regional Government-Owned Enterprises (BUMD), cooperatives and private enterprises, and d) promotion of public, community and NGO participation in basin-management institutions.

Irrigation management policy reform. Since irrigation management turnover to WUA Federations was considered to be the most controversial reform, it was agreed that a policy declaration to this effect would be issued by the President of Indonesia prior to WATSAL loan negotiations. The Declaration, prepared by the WATSAL Task Force and approved by its Steering Committee and Tim Koordinasi, was publicly announced by the President of Indonesia on April 13, 1999. The Declaration sets out the basic policy principles of an irrigation management reform based on: a) democratic establishment of sustainable WUAs as legal organizations with self-governing and self-financing authority and water use rights to manage secondary (and larger) irrigation networks transferred to their control, b) changing the responsibilities of irrigation agencies to be an accountable provider of support services to WUAs and to undertake joint and transparent participatory management with WUAs of irrigation facilities remaining under government control, c) nationwide payment of an ISF to be collected and retained by WUAs for funding O&M of networks under their control, and d) providing a basis for mechanisms of direct transfer of matching government funds for rehabilitation of networks managed by WUAs.

The Declaration's principles were to serve as the basis for drafting of a government regulation on participatory irrigation management as well as guidelines for the district regulations needed to implement the new management arrangements. These principles were issued as Presidential

Instruction No. 3 in April 1999 (Inpres 3/99) on "Irrigation Management Policies." The Declaration was listed as the following five principles:

- Redefinition of tasks and responsibilities for irrigation management agencies.
- Empowerment of WUAs and WUA federations.
- Irrigation management transfer to WUA federations.
- Restructuring of financial mechanisms for irrigation management.
- Sustainable utilization by preventing conversion of public irrigation-scheme land to other uses.

Inpres 3/99 was the key milestone needed to begin piloting of establishment and support of WUA federations under JIWMP. As an empowerment transition measure, investments in design and execution of scheme rehabilitation works under JIWMP would only be sanctioned if formal or informal water user groups had been consulted and their comments taken into account. Inpres 3/99 would also serve as the vehicle whereby PP 23/82 on irrigation would be amended to a) cater to empowered WUAs and WUAFs as irrigation-management institutions, and b) revise the roles and responsibilities of irrigation agencies to support empowered WUAs and WUAFs.

ISF reform. In order to create a positive incentive for payment of an ISF by irrigators, the Director General of PUOD issued a Decree on September 14, 1998 whereby district revenue authorities are to: a) inform WUAs of the ISF amounts collected within their irrigated area, and b) transfer these amounts to active WUA bank accounts for use by the WUAs for the O&M needs of irrigation networks under their jurisdiction. This precedent-setting decree—whereby ISF proceeds are not regarded as general revenue to be surrendered to district revenue authorities—set the stage for an ongoing revision of the defunct ISF framework and became the basis for the self-financing authority of WUAs in accordance with the Declaration of Irrigation Management Policy Reform and its Inpres 3/99.

The regional autonomy issue. By early 1999, it became clear that the October 1998 MPR decrees on regional autonomy would be implemented as the Government of Indonesia began to prepare legislation for administrative decentralization and state-revenue-sharing with provinces and kabupaten. It became apparent to the sector agencies in general and the WTF in particular that such legislation would have far-reaching implications for the reform agenda. Whereas under the existing government system, all ministerial regulations and decrees were binding at all levels of government, in future, ministerial edicts would bind only the national administration. Therefore, to implement any government regulation (PP), provinces and districts would have to issue their own laws and regulations provided they do not conflict with national laws and regulations. Thus, the reform agenda would have to prepare not only new Government Regulations, but also Guidelines for the implementing laws and regulations of provincial and kabupaten governments.

Public consultations and sector environmental assessment (SEA). During the preparation of WATSAL, the World Bank issued an Operational Directive stating that, for all SECALs, a SEA would be required. The SEA had to be prepared on the basis of public consultations and was to assess the positive and negative implications of the proposed policy reforms, including their potential environmental and social impacts. A SEA report was prepared by the WTF and submitted to the

Bank on March 5, 1999. Public consultations were conducted with representative stakeholders with the aim of disseminating information concerning the proposed policy reforms, eliciting responses on the likely positive and negative impacts as perceived by the stakeholders, and sharing the results of the SEA preparation with the same consulted groups at a follow-up meeting. These consultations were conducted primarily by national NGOs, with local facilitators, and held in three selected provinces (West Sumatra, West Java and South Sulawesi) at three levels: provincial, district and local, in order to reflect opinions from different levels of civil society and government. Consultations were also held at the national level and with NGOs in each of the provinces. The WTF will implement the SEA recommendation of further public consultations. Consultations in which the government asked the public to comment on proposed policies were events previously inconceivable in Indonesia. The success of the SEA was that the WTF was impressed by the quality and utility of the feedback so that it decided that all future sector policy and legislation would be subjected to a similar process.

The SEA report concludes that the WATSAL reforms are not likely to induce any adverse environmental or social impacts. In fact, they specifically address improvement of Indonesia's freshwater habitats, would lead to community empowerment for participatory irrigation management and make sector management more transparent by introducing institutions for stakeholder involvement in policy and decision making. The public consultation summaries in the SEA highlighted most of the social and institutional deficiencies that the proposed reform program would seek to address. These include: a) lack of coordination in water resources management, b) lack of transparency in managing water rights and levies, c) weaker water users disadvantaged by more powerful stakeholders, d) overall weakness in implementation and enforcement of environmental regulations, e) overlapping regulations, issued by different sectoral and regional institutions, are a major source of confusion, especially in the fields of issuance of licenses and allocations of water rights, f) the inadequate attention paid to the natural water-storage capacity of watersheds, groundwater recharge zones and wetlands, g) the lack of coordination between utilization and conservation of water resources, and h) the deficiencies of hydrological and other data.

Loan negotiations and their Impact. During April 1999, after the President's Declaration of Irrigation Management Policy, the Policy Matrix and Letter of Sector Policy drafts were finalized and loan negotiations were begun. The Bank proposed that the WATSAL loan of US$300 million be disbursed in two tranches: a first tranche of US$50 million upon Board approval with the remainder of US$250 million being disbursed upon completion of the reform agenda by December 31, 2000. It became immediately apparent that the Ministry of Finance wanted a much greater rate of disbursement because of the fiscal crisis. Although the World Bank team warned that the reform agenda was not so easily broken into many tranches because of interdependence among the reform outcomes, a framework of three tranches of US$50, 100 and 150 million were agreed upon. Another difficult aspect was the issue of Inpres 3/99 on irrigation management policy. Originally, the government promised that this would be issued as a higher-level presidential decree and contain the President's irrigation policy declaration text, but the Cabinet's legal department objected as it claimed that irrigation-management turnover of secondary canals to WUAs was in conflict with PP 23/82 and, therefore, a decree was inadmissible. The lower-level Inpres 3/99 was agreed upon with the proviso that the Minister of Public Works would issue the policy and a regulation to implement it. Subsequently, the WATSAL was approved by the Bank's Board in June 1999. The negotiation issues have since turned out to be a precursor of some of the problems that have delayed completion of the reform agenda to date, namely: a) the desire to receive disbursement even though this may be at the expense of reform content, and b) the resistance to irrigation policy reform in some quarters of the bureaucracy on the pretext of conflict with existing legislation.

The Government's Sector Reform Program

WATSAL Objectives

WATSAL framework. The WATSAL Letter of Sector Policy and Policy Matrix outline the final reform agenda agreed with the government. The Letter of Sector Policy (signed by the Minister of Planning on behalf of the government as a whole) provides government's general objectives and reform commitments; the Policy Matrix summarizes them on a specific basis and indicates which legislation has to be amended to achieve each reform, or which quantitative institutional outcome is required. The last page of the Policy Matrix indicates which principles are to be incorporated in the National Water Policy. The tranching or sequencing of the reforms is indicated in the Policy Matrix by a font change. All components of each tranche must be completed for the tranche disbursement.

The letter of sector policy's reform objectives. The overall objectives of the reform agenda are:

1. Facilitate environmentally and socially sustainable management of water resources by improving national policies and institutional, regulatory and decision-support frameworks.

2. Strengthen the organizational, financial and administrative framework for river-basin water-resources management.

3. Improve regulatory institutions and implementation arrangements for effective regional water-quality management.

4. Improve the performance and sustainability of public irrigation schemes by establishing an institutional framework for transparent and accountable delivery of irrigation services and participatory fiscal support to democratic farmer organizations empowered with autonomous governance and financial authority to gainfully manage and control secondary and higher-level irrigation networks for which they are willing to accept full responsibility.

The World Bank's WATSAL objectives. The Bank's[56] "Report and Recommendations of the President" for the WATSAL operation proposes the following general objectives for WATSAL:

> "The WATSAL Loan has four general goals to be achieved through Balance-of-Payments support to GoI, namely to: a) facilitate sustained government support for a necessary Sector Reform Program which addresses water resources and irrigation sector problems and structural deficiencies through policy, legislative, regulatory and institutional adjustments; b) enable the development and utilization of professional expertise within the country to formulate a sector reform program in line with national needs and aspirations, c) facilitate

[56]The World Bank: "Report and Recommendation of the President of the IBRD to the Executive Directors on a Proposed Water Resources Sector Adjustment Loan in the Amount of USD300 Million to the Republic of Indonesia;" Report No. P 730 4-IND, Washington D.C., April 23, 1999.

a process of reaching intergovernmental consensus and internalized "ownership" of the reforms; and d) improve sector management by transformation of its policies and institutions to a level that would mobilize the subsequent sustained and coordinated support by the donor community.

As will be seen below, the specific reforms being undertaken by the government implicitly realize four internationally recognized water-sector "best practice" principles, namely: empowerment, accountability, sustainability and unbundling of service provision.

The Agreed Reform Outcomes

The specific reforms included under each of the four objectives of the government are the following:

Improved policy, institutional, regulatory and management information system frameworks

a. Implementation of a national-sector coordination framework headed by a National Apex Body for resolution of sector policy issues, review of strategic planning and intergovernmental program budgeting, and oversight of sector management and its regulatory performance.

b. A National Water Resources Policy and NWRP Implementation Plan to guide the sector-management process and ensure development of its management instruments and the establishment of management institutions in a programmed manner with adequate funding.

c. Administrative and coordination arrangement for an improved and sustainable framework for central, provincial and district management information data organized to support a Management Decision-Support System based on an interagency data-sharing network.

d. Establishment of: i) a national hydrology institution to manage a sustainable national framework for improved collection, processing and dissemination of surface water and groundwater hydrological data, ii) adequately funded and staffed Provincial Hydrological Units in eight provinces under the national framework, and iii) a national water-quality monitoring network.

e. Establishment of a national framework for an enforceable water rights system for surface water and groundwater allocation, and a uniform framework of provincial water-abstraction licensing.

f. Issue of national regulations and guidelines for representation of nongovernmental stakeholders on Provincial and River Basin Water Regulation Committees (PTPA and PPTPA), and the establishment of such transparent PTPA and PPTPA institutions in eight provinces and in their key river basins, respectively.

Improved river-basin management institutions

a. Improved river-basin management by: i) the formation of provincial-basin management units in at least eight provinces, ii) the establishment of river-basin management corporations in four key strategic basins on the basis of a generic Government Regulation for such corporations, and iii) an amended corporate structure for two existing basin-management corporations (POJ and PJT Brantas) to provide for financial sustainability and representation of provincial governments on their management boards.

Improved water-quality management institutions

a. Improved framework established for basin water quality management and mitigation of water pollution by industry, mines and municipalities, including i) tax incentives for corporate investment in wastewater treatment facilities, and ii) payment of effluent discharge fees by polluting entities.

b. Provincial environmental-impact control agencies grant operational concessions to basin-management corporations to undertake pollution-source monitoring and implementation of an effluent discharge fee framework in six highly developed river basins.

Improved irrigation-management institutions and arrangements

a. Adoption of a national framework for the establishment by district governments of autonomous and self-financing WUAs and WUAFs for i) the management of irrigation networks transferred to their control, and b) the joint management by WUAs/WUAFs and local governments of large irrigation schemes still under partial government management.

b. Launching of a program for democratic establishment of empowered WUAs and WUAFs in eight provinces.

c. Revision of the roles and functional responsibilities of central, provincial and district government irrigation agencies to provide support services to WUAs and WUAFs in conformity with the decentralization of public administration.

d. Implementation of a nationwide ISF framework for sustainable financing of O&M and asset amortization of irrigation schemes by the local governments, WUAs and WUAFs.

e. Establishment of a "demand-based" WUA Irrigation Improvement Fund for financing of phased and affordable rehabilitation of irrigation networks under WUA/WUF management control by direct transfer of matching funds to eligible WUAs/WUAFs.

Principles Left for Resolution during the WATSAL Reform Process

The approach taken by the World Bank was not to over-specify the details of the reform beyond the agreed reform outcomes and the general principles stated in the Letter of Sector Policy. The details were to be developed by the WATSAL Task Force and incorporated in the various items of legislation required to accomplish a given outcome. This approach enables: a) the development of a national analytical ability and b) the accommodation of legitimate pluralistic views and interests in specifying implementation and procedural modalities. Some of the more important issues to be resolved are described below.

Policy, institutional and decision support. The important issues are:

- National apex body for sector coordination. The nature of the national apex body was not fully resolved at the time of WATSAL negotiations. Although a national-water council was desired, some questions were raised as to the desirability of a commission or board. Thus a National Water Council is not specifically stated as a government commitment.

- National water policy. The policy principles—as listed in the Policy Matrix—should be incorporated into all legislation in a consistent manner. Previous policy statements bore no relation to legislation. Most important would be a clear policy of cost recovery and fiscal sustainability.

- Stakeholder issues. The principles of stakeholder participation in the National Apex Body (Water Council) and provincial and basin committees need elaboration in terms of i) The definition of stakeholders. ii) Which stakeholder representatives are to be selected and appointed? iii) What should be the strength of stakeholder representation? iv) Should stakeholder participation be in the nature of an advisory capacity or of a decision-making authority?

- Water rights framework. Selection of a water and water-quality rights framework suitable to Indonesia that also allows for customary water rights is a complex matter requiring much deliberation and piloting. Consequently, the policies, strategies, regulations, institutions and implementation of the system are to be determined according to a plan that needs to be formulated by the reform process.

- MIS and decision-support issues. The reform needs to determine the architecture of the integrated decision-support data system and the administrative structure that will ensure its sustainability. Similarly, the framework of the national-water quality monitoring network needs to be determined along with its design and procedural details.

River-basin management institutional principles. The key issues to be resolved are:

- *Ownership of river-basin corporations.* Currently, both existing river basin corporations are national state enterprises (BUMN). It is not certain that these and the proposed four new corporations should also be BUMN as some provinces feel that they should be provincial enterprises (BUMD) by virtue of the regional autonomy legislation and their desire for local control and the potential revenues from the corporations. The Letter of Sector

Policy lists a number of related financing issues that need to be resolved in a generic PP on the establishment of river-basin corporations.

- *Financing and management of river-basin corporations.* With the advent of regional autonomy, a number of questions need to answered, including a) an explicit definition of the role of PJTs as "operators" without regulatory authority, b) the relationship and division of labor between a PJT and a Balai PSDA in the same basin, as well as its relationship to the basin committee (PPTPA), and c) whether basin corporations should engage in irrigation water distribution or be only responsible for major infrastructure and bulk water supply.

- *Irrigation responsibilities of Balai PSDA.* Balai PSDAs were originally envisaged as basin management units. With the advent of regional autonomy and likely transfer of irrigation to kabupaten, provinces would most likely assume responsibility for cross-boundary systems. The question arises as to whether an arrangement using a Balai PSDA as a bulk water supplier is operationally and financially viable (e.g., should the kabupaten contribute to the operational costs of this service). For large schemes, especially those in the Outer Islands that had been previously under Central management, the question arises as to whether provinces should assume control for schemes involving two or more kabupaten and, how the service would be financed.

Pollution control regulatory enforcement and financial incentive principles. The key issues are:

- *Disincentives for effluent discharge and financial incentives for pollution abatement.* The government is to determine all details with respect to effluent fees and pollution charges, as well as the nature of financial incentives to be offered for wastewater treatment by industries and municipalities. The latter are to be consistent with national and local government tax laws and regulations.

Irrigation management policy-implementation principles and procedures. The key issues to be resolved by the government include:

- *Establishment of legalized autonomous WUAs and WUA federations.* One of the principal issues to be resolved is whether WUAs will have a standard set of bylaws or whether this will only apply to WUA federations. Many feel that WUAs should be formed according to local customs as previous attempts to enforce a rigid set of bylaws were not successful. The second issue is the clarification of governance authority versus management authority after turnover: this is not clear to many people and creates misunderstanding in the drafting of regulations. Much of this derives from fears of loss of control by the bureaucracy, especially if schemes are to be governed by a farmers' committee of WUA federation representatives in which officials are in the minority.

- *Reorganization of irrigation agencies.* Besides overcoming bureaucratic fears of loss of power and staff, the modalities of creating a viable kabupaten irrigation agency service orientation to support WUAs constitute a complex problem that needs to be resolved during the reform process. An action plan will have to be prepared to formulate and implement a framework for revising the traditional roles and responsibilities of these agencies (including operational procedures, staff deployment, management system, capacity building, etc.).

- Financing of WUA activities and irrigation O&M. Setting up a demand-based Kabupaten Irrigation Improvement Fund to support rehabilitation of networks under WUA management presents many governance, procedural and fiscal challenges. This is to be compatible with an evolving budgetary system as decentralization gets underway, while a framework for WUA equity contributions using their ISF collections has also to be developed. New O&M funding arrangements have to be found for the infrastructure and networks remaining under government control as well as for networks under joint government-WUA management.

Suitability of the reform agenda. Annex VIII A exhibits a mapping of the WATSAL reform agenda into the framework of the national water-sector management model of annex IB. There is a reform for each of the significant elements making up the water sector's legal, policy and water-administration institutions.

Formal and Informal Sector Reform Instruments

The above reform agenda is based on formal and informal reform instruments. The formal reform instruments agreed with the World Bank are:

- Revision of the sector legal framework to reflect new policies and institutions while adjusting the sector's structure to conform to the decentralized administrative and fiscal structure of the government.
- Issue of a formal National Water Policy that guides sector activity.
- New institutions such as stakeholder fora and empowered WUAs federated up to the scheme level that have influence in scheme management.
- Creation of a specified number of new organizations such as four new PJTs and Balai PSDAs and PHUs in at least eight provinces.
- Control of the reform process by means of fixed disbursement criteria and tranching based on monitorable indicators.

The informal instruments available to the World Bank are: a) guidance by World Bank experts and supervision missions, and b) raising the awareness and involvement of the donor community in the reform process and requiring application of the reforms. Additional informal instruments available to the government are: i) public consultations about each reform concept including involvement of NGOs and civil society, and ii) dissemination of the reform agenda to all sector agencies expressing a clear commitment to its success. As will be seen later below, the informal instruments are not fully applied because of a lack of high-level commitment.

The World Bank's Initial Perceptions of WATSAL Reform Process Risks

Presentation of the WATSAL to the World Bank's Board required a listing of the likely risks that could cause operational failure, and the arrangements made to mitigate them. It is useful to review

the Bank's initial perceptions of such risks as they are relevant to the evaluation of the reform process. The risks listed were the following:

- Weakening government commitment due to political difficulties and sector interest groups opposed to reform.
- The time needed to complete the reform program may be excessive due to the difficulty of reaching consensus about the new institutions and policies.
- Difficulties in reaching conceptual consensus within the bureaucracy.
- Nonacceptance of reforms by the civil society.
- The possibility of weakening economic situation leading to reluctance in addressing cost recovery.
- Inadequate capacity of the WATSAL Task Force and national consultants.
- The government's real interest is loan disbursement and not reform content.

As will be seen in the final evaluation, with the exception of concerns about the Task Force and NGOs, most of the risks are very real and plague the reform process.

Factors Affecting the WATSAL Reform Process (Development of "Process Rules in Use")

Impact of Changes of National Government (New "Actors")

Changing sector management structure. The national elections held in September 1999 after the WATSAL became effective on June 29, 1999 had far-reaching consequences for the reform process. The new government, formed by President Wahid ("Gus Dur") in November 1999, totally changed the water sector by abolishing the Ministry of Public Works. In its place, two ministries were established, a Ministry of Settlements and Regional Development (KimBangWil) and a State Ministry of Public Works (MeNeg PU). The reason for this action was never fully clear except for off-the-record ministerial statements that the new Reform Cabinet wished to break up the corruption culture that existed in MPW. Under the new arrangement, KimBangWil would undertake sector investments and management while MeNeg PU, as a state ministry, would be responsible for policy matters. About 100 of the brightest staff of MPW were transferred to MeNeg PU. On the other hand, KimBangWil was reorganized into five directorate generals, including a Directorate General for Rural Infrastructure and a separate DG for Spatial Planning and Regional Development. Thus, water resources and irrigation activities were wholly balkanized with no DG for water resources, basin planning and management under DG Spatial Planning and irrigation infrastructure under DG Rural Development. As a result, KimBangWill entered a period of uncertainty and staff agitation because of a perceived breakup of its professional capability and loss of integrative focus. In addition, all members of the senior staff were subjected to a "fit-and-proper" test to determine their capabilities and general honesty. The overall management of water resources and irrigation became somewhat dysfunctional until a Directorate General of Water Resources was formed in December 2000. By that time, MeNeg PU was dissolved and combined with KimBangWil to form a Ministry of Settlements and Regional Infrastructure (KimPrasWil). By this time, the new regional autonomy laws were about to take effect in January 2001 totally changing the relationship between KimPrasWil and the provincial and kabupaten water-resources agencies and staff.

Delayed reform progress due to the sector structural changes. The initial changes in the lead ministry's structure caused many problems for the implementation of the reform agenda. First, the rivalry between KimBangWil and MeNeg PU meant that there was no longer a definite lead ministry for resolution of the many reform issues that had to be addressed by the Task Force and, in some cases, conflicting views between the two ministries regarding some issues (e.g., stakeholder representation and the National Water Council). With respect to the reform agenda, there was a major loss of institutional memory in KimBangWil while new ministers and senior officials needed to be "reeducated" about WATSAL and the reform agenda. The Task Force began to work well, but suffered from the problem of the interministerial rivalry when issues needed resolution at the Steering Committee level. Most of all, the Tim Koordinasi became defunct because of the issue of who should be its chairman, whether the senior KimBangWil Minister or the junior State Minister responsible for MeNeg PU. Also, during 2000, when the implementing regulations for the decentralization legislation were drafted, the two rivals could not agree on how responsibilities for water resources and irrigation management should be distributed between provinces and kabupaten. Thus the new State Ministry of Regional Autonomy issued PP 25/00 that provides a very unclear

definition of the provincial responsibilities for basin management, causing further complications for interpretation of decentralization in the sector.

The interministerial rivalry caused major delays between July 1999 and February 2000. The World Bank complained and requested the government to restate its recommitment to the WATSAL reform agenda as the loan was to close in December 2000. This commitment was given by the Coordinating Minister of Economic Affairs who also made the KimBangWil Minister responsible for delivery of the reform agenda. This arrangement speeded up the work of the Task Force as there was again a ministerial address for the resolution of issues. However, all efforts to reestablish the interministerial Tim Koordinasi failed until December 2001 when a new Tim Koordinasi was established by Presidential Decree. The new Tim Koordinasi was to further develop and coordinate the National Water Policy and serve as an interim arrangement until the National Water Council is appointed. This however has to await the revision of UU 11/74.

The Task Force was also reappointed with different representation. This development helped and the Task Force began work in earnest. However, new obstacles arose. Rivalry began between KimBangWil and the reconstituted Ministry of Home Affairs and Regional Autonomy (MoHARA) on the question of which agency should be responsible for WUA establishment and empowerment. MoHARA regarded issue of guidelines for WUA empowerment as its natural prerogative as it was responsible for implementing regional autonomy and guidance of regional and kabupaten governments. Last, the Cabinet's legal office also became an obstacle. When the Task Force had made good progress by October 2000, this office blocked clearance of irrigation reform legislation again using the argument that it was inconsistent with the existing PP 23/82 on Irrigation. Suggestions by the Bank to amend PP 23/82 with respect to allowing farmers to get responsibility for secondary networks were not accepted till about September 2001.

Impact of Decentralization Legislation

Uncertainty in Water Resources Management Responsibilities

Impact of new administrative boundaries. As a result of decentralization and the granting of substantial governmental autonomy (legislative, executive and fiscal) to provinces and districts, the number of provinces increased from 27 to 30, the most notable being the split of West Java into West Java (its original central and eastern regions) and Banten (West Java's original western region and the site of the old Banten kingdom). Also North Sulawesi was split to create Gorantalo (which includes the Limboto lake, an important water body in North Sulawesi suffering severe eutrophication). The number of districts and urban areas (kotamadya) increased by 30 each to 268 and 85, respectively. Thus, the number of local governments increased from 293 to a total of 353. The district changes are particularly significant for sector agencies in terms of new administrations that have to be set up; loss of staff critical mass and institutional memory and expertise; and the increased coordination burden on provinces, especially in trans-boundary functions like river-basin management. In fact, the most successful pilot Balai PSDA in the BWRM program, located in the Ciujung-Ciliman basin territory of West Java, found itself in the Banten Province stripped of some of its key managers and professional staff. Similarly, as a result of redrawing district boundaries, the Cikunten Irrigation Scheme in West Java found its headworks under the responsibility and control of the Tasikmalya municipal government. This exposes the scheme to the danger of some of its agricultural command area being converted to an urban designation

resulting in greatly increased land value. Consequently, these areas could be sold off to real-estate developers resulting in loss of irrigated area and public infrastructure. Land conversion of irrigated areas is formally against the law under the New Order, but it occurs nevertheless ("rules-in-use"). In fact, about 20-30,000 hectares of irrigated land is converted annually in Java. Thus, as a result of decentralization, a major institutional consideration in the water-sector reform program and subsequent programs on water resources and irrigation-management programs will be the problem of interlocal government coordination and collaboration (and conflict resolution), particularly for basin management, as well as seeking consensual ways of internalizing the externalities caused by "balkanization" of administration at the district level.

The transition to decentralization meant a major shift of staff between national, provincial and district government-sector administration units. In the water sector, for example, this meant loss of institutional memory, expertise and weakened logistics' ability as staff, equipment and buildings were transferred. It is assumed that these disruptions will be transitory in the long run, but create a major medium-term capacity building challenge, as not only must skills and knowledge be transferred to staff but the latter must also be trained to operate effectively in a new agency environment whose goals and roles have drastically changed. Although a large body of Government Regulations and Executive Orders has been issued to govern the implementation of UU 22/99 and UU 25/99 which began in January 2000, there are many uncertainties and national government concerns about the technical capacity of kabupaten governments to implement their greatly increased functional responsibilities and manage vastly increased revenues and budgets. This also naturally generates a major concern in the larger central government ministries about the loss of authority and loss of bureaucratic/financial power, as capital investments and development projects would be increasingly managed and implemented under the control of regional and local governments. For the infrastructural agencies in general and the water sector in particular, the general trans-administrative boundary provisions of PP 25/2001 have given rise to major operational and funding responsibility issues, especially where the need for economies of scale and "internalization of externalities (diseconomies, social and physical impacts and opportunity costs)" are concerned. This is particularly relevant for river basin and groundwater aquifer management, as well as for environmental and social sustainability. These concerns affect this politico-economic transition to decentralization in general and the substantive institutional aspects WATSAL program and its reform process in particular.

Decentralized programming and budgeting. A great deal of uncertainty has been introduced for project programming and budgeting as a result of UU 25/99. If an activity is not carried out by the central government, the provincial and kabupaten governments have to fund capital projects and normal O&M from their DAU. For externally aided projects implemented regionally, this means that these governments have to provide the necessary counterpart funding. In the transition period, loan funds are provided from the national budget through the national implementing agency but counterpart funding comes from the regional or local government DAU. Whereas the Pimpro system still exists, from FY 2003, a locally appointed Pimpro will be used, but the situation with externally aided projects is unclear, i.e., will regional and/or local governments have to repay some portion of the loan in local currency or not and, will externally aided project loans be provided through a DAK mechanism? This development has both positive and negative implications. First, at the national level, the DPR has become very involved in reviewing national line agency budgets, and much more effort is required by the agency for justification of the budgets. The DPR also expresses preferences, e.g., it wishes to reduce capital expenditure on Java and wants greater focus on the

Outer Island provinces. Second, the provincial and kabupaten legislatures (DPRD) are more deeply involved in project budgeting as they provide the counterpart funding. In most respects, this not only increases local agency accountability but also leads to different sector priorities (e.g., difficulties in funding for O&M of water infrastructure and hydrology). In the long run, repayment may result in greater selectivity for capital projects.

Emerging implications of decentralization for the water sector. In the water sector, local interpretations of UU 22/99 and PP 25/00, regarding the ownership of water within a major regional reservoir located in the South Sulawesi Province's Kabupaten Goa, is being regarded by the Regent as being managed by his government as a revenue-generating facility, irrespective of its regional function, national ownership and basin water-resources management function. Similarly, large irrigation canals that traverse district boundaries in Java are generally regarded as the O&M management responsibility of a provincial basin-management agency, while all other linked secondary canals and irrigation networks are being managed by the district government, which is responsible for irrigation under the basic interpretation of UU 22/99 and PP 25/00. In most Outer Island provinces, however, the provinces generally regard O&M management of entire cross-district boundary irrigation schemes as their responsibility and relegate the district government to the management of small irrigation schemes that are entirely within the district boundary. Whereas many kabupaten agree to this because of their limited fiscal capacity (the block grant mechanism is not yet operational), no discussion of the district's contribution to O&M or scheme cost-sharing that is consistent with UU 22/99 and UU 25/99 has taken yet taken place.

The same issue applies to mega irrigation schemes that cross several district boundaries in off-Java provinces such as Lampung (e.g., the Wey Rarem Project) and South Sumatra (e.g., the Kommering Project) that do not traverse provincial boundaries. These projects, if already partially or fully operational, were usually managed and funded by the national government's MPW (major infrastructure), while the provincial governments usually undertook O&M of the secondary and smaller networks (although this has not yet been handed over to the province in some cases). The implications of decentralized management of these off-Java mega schemes under the new legislation still remain to be institutionally and operationally addressed.

Decentralization and river-basin management corporations. In West Java, the large nationally owned (BUMN) river-basin corporation, the former Jatiluhur Authority, is responsible for O&M of a 240,000-hectare irrigation scheme (now called Jatiluhur Water Management Corporation (PJT II) after its restructuring in 1999 to provide a modicum of West Java Government influence in its management as part of the WATSAL program). This is in addition to its service delivery mandate as a major bulk water supplier to the wider Jakarta metropolitan area and hydropower generation. The O&M of this irrigation scheme of strategic importance and the largest in Indonesia have also been the most underfunded with a unit O&M budget about 50-60 percent less than the national average. Albeit that irrigation is now a district government responsibility in West Java, including the establishment and support of empowered irrigation WUAs and WUAFs, no administrative decentralization and cost-sharing arrangement has been developed between the West Java Government, PJT II and the affected district governments in order to solve the O&M problems of the scheme and its poor irrigation services. In fact, PJT II has no program to upgrade its defunct and outmoded WUAs, or to provide them with the empowering support being institutionalized under WATSAL's irrigation reform program.

The West Java Government, on the other hand, has on its own initiative to capitalize from the provisions of UU 22/99 and UU 25/99 and, without national support or initiative, enacted a Perda to establish a West Java Water Corporation (WJWC). The WJWC is intended to serve as a managing (not regulatory) and financing corporation for all water utilities and attract private financing for their infrastructural rehabilitation, modernization, development and service-delivery improvement. Under this framework, it wishes PJT II to be converted into a provincial, government-owned, public corporation (BUMD) for basin-management services and placed under the management oversight of WJWC while divesting its local irrigation network distribution role to the district governments. Needless to say, despite its merits, the concept of a WJWC has not been greeted with enthusiasm by KimPrasWil.

The complexities of decentralization and fiscal equalization are such that it is no longer clear that four new river-basin corporations can be established as required by the WATSAL Policy Matrix. Kabupaten within the designated river basins in Central Java view the concept of a river-basin corporation as a "cash cow," which could ostensibly be an additional revenue source. They base their claim on the revenue regulations of UU 25/99 claiming that they are entitled to a share of the revenue from resources within their boundaries. This creates protracted negotiations and entails many agreements. In the case of the kabupaten Goa in the Jenneberang basin in South Sulawesi, the Bupati claims that he would control allocation of the water stored in the Bili Bili reservoir within his jurisdiction. This is all in addition to the controversy of whether a basin corporation should be nationally or provincially owned. To date, only a basic framework has been established for the Bengawan-Solo basin corporation managed by PJT Brantas.

De Facto Modus Operandi of the Task Force

Success with minimal consultant assistance. Despite the problems encountered by the change of the sector administration's structure and the uncertainties resulting from decentralization legislation, the Task Force achieved the WATSAL goal of developing a national capability of developing the legislation needed to implement the reform agenda. The representatives of each agency worked well together and began to reach consensus on the issues remaining to be resolved. Amazingly, their work was accomplished at weekend retreats while carrying out their normal agency work load. They were assisted by the ADB Capacity Building Project's consultants for the legislation needed for Objective 1 while the legislation needed for Objectives 2, 3 and 4 was developed mainly by Task Force national experts. JBIC provided funding for national consultants to assist the Task Force but their input was irrelevant. The Task Force virtually ignored any inputs they provided. Most were retired MPW staff who did not have the skills necessary for analysis of BWRM and who, for the most part, were ideologically opposed to the concepts of participatory irrigation management. Furthermore, some of the KimBangWil/ KimPrasWil supervisory staff also did not encourage the consultants' to work in the spirit of the Letter of Sector Policy commitments.

Difficult working environment. Although appointed by the government, the Task Force is regarded with ambivalence by KimPrasWil. Its work is good and represents the output of the best and brightest that the sector agencies can muster. However, its documents tend to be regarded as raw material, which needs KimPrasWil clearance, particularly for those activities it regards as its mandate or a threat to its bureaucratic interests. This has persisted from the beginning of the WATSAL process to date. Thus outputs, such as the draft of a revised water-resources law or new PPs, are

subjected to some editing by KimPrasWil's own committees, especially where content is not exactly to the liking of KimPrasWil management. This is a source of great frustration to Task Force members. Thus the World Bank supervision team often has to intervene by drawing attention to amendments diverging from the WATSAL Letter of Sector Policy commitments. The latest difficulty is that a conservative element that has ascended in Bappenas in league with KimPrasWil has managed to change Task Force leadership. Thus all strongly "reformist" elements, such as its Secretary and NGO chairman of the irrigation working group, have been replaced. This development does not bode well for successful completion of the reform agenda. For example, any radical changes in irrigation financing in support of WUAs and the change of role of irrigation agencies may not be forthcoming.

Formulating a new water-resources law. The WATSAL Letter of Sector Policy and Policy Matrix do not require a new law and government regulations but only amendments to accommodate the reforms. Accordingly, it was believed that this work could be accomplished by December 2000. However, the Task Force's deliberations reached the conclusion that over 60-70 percent of the law required revisions and that, according to prevailing regulations, a new law and PPs need to be drafted. It also became logical that, if possible, the new law should be enacted after the National Water Policy was published. Formulation of the new law by the Task Force took about 2 years. During this period, the DPR entered into confrontation with President Wahid's administration and the chances of its processing the new law seemed slim. This also raised issues about whether the new law should be presented to the DPR as a government initiative or whether the draft should be left to the DPR to develop. The former process was chosen, especially after Wahid was deposed and Ms. Megawati became President. Unfortunately, despite the processing delay, during the intergovernmental discussions of the Task Force's very good draft, lawyers made numerous changes removing many provisions to be dealt with under the new PPs. Great uncertainty exists as to whether the Task Force's carefully developed framework will be further altered within the DPR and thus also change the PP draft formulations (which are only provided to the DPR for information by the government). There is a large backlog of legislation currently with the DPR and, albeit that the loan agreement has been extended twice, the new law and PPs can be issued by June 30, 2003 (the last and final closing date of the loan). In essence, the completion of the reform agenda within the WATSAL framework is now in jeopardy.

The new law is very different to the existing UU 11/74 as it is based on water-resources management and not on water-resources utilization. It considers the decentralization laws and is framed to improve water-resources sustainability in a more holistic and integrated manner. Currently, the draft has specific provisions for a National Water Council, stakeholder participation, water-use rights and water conservation. The PP structure is also different: there are to be 14-15 PPs of which only the PP on Irrigation has been issued. The expected PPs are the following:

a. *Water management.* This will replace PP 22/82 and govern management processes and procedures in water conservation, utilization and control of water damages (e.g., floods).

b. *Irrigation management.* Issued as PP 77/01 in December 2001 this PP provides support for a participatory irrigation management framework for public irrigation through empowerment of WUAs and facilitates irrigation management transfer. The PP strengthens fiscal and O&M aspects by decentralized management and a more effective approach to farmers' contributions.

c. *River management.* The existing PP 35/91 will be revised to reflect decentralization legislation.

d. *Swamp development.* The existing PP 27/91 is expected to be revised (work on this has not yet begun).

e. *Groundwater management.* A new PP on groundwater management is planned and will include some aspects that are contained in a recently issued Minister of Mines and Energy Regulation (Permen 1451K/10/MEN/2000) as a guideline.

f. *Watershed management.* An early draft is available and will have to be reconciled with a Minister of Forestry decree (Kepmen 52/KPTS-II/2001) which, inter alia, provides guidelines for the water-resources aspects of watershed management.

g. *Clean water management.* A new PP for regulating water supply is planned.

h. *River basin corporations.* A generic PP to support the establishment of river-basin corporations, as BUMN or BUMD, has been drafted.

i. *Financing of river-basin management.* A new generic PP to identify sources of river-basin corporation financing (based on the "polluter pays" principle) has been drafted. This PP will provide for water abstraction and wastewater discharge fees that can be levied by PJTs and also raise revenue for basin management.

j. *Water use rights.* A new PP to establish legalized water use rights is planned as part of the sector reform. However, academic and field studies are required to develop this instrument and its issue is not a WATSAL requirement.

k. *Stakeholder participation.* Originally, it was planned that stakeholder involvement would be mandated through a separate PP. However, there is some controversy as to whether this is necessary, and its provisions may be enforced through a clause in the new water law and amendment of existing regulations for PPTPAs and PTPAs.

l. *PPs for PJT I and II.* The PP for PJT Brantas and POJ was last revised in 1999. These brought POJ and PJT Brantas under the Ministry of Finance with identical charters. However, to strengthen financial management and the provincial role in the governance of these PJTs, new PPs are needed. Unfortunately, the issue of PJT II's (POJ's) management of the 240,000-hectare Jatiluhur irrigation scheme has not been resolved and it is uncertain whether it will have to carry the financial burden of irrigation water distribution.

m. *Dam safety.* It is expected that a PP covering this important topic will be issued as, currently, it is covered by an old MPW ministerial regulation.

Apart from finalizing and issuing the new PPs, much work still remains in formulating guidelines for provincial legislation for each PP.

Improving Dissemination of the WATSAL Program by the Government

Gradual dissemination mechanisms. Following the Declaration of Irrigation Management Reform by the President in April 1999, one of the World Bank's major concerns regarding the WATSAL reform agenda was the government's apparent reluctance to very strongly disseminate the reform agenda within its agencies and to the public. It would be expected that senior ministers and Directors General would discuss the reforms in their public statements, etc. In mid-May 2000, Bappenas issued a document containing translations of the Letter of Sector Policy and the Policy Matrix to all ministries. Initial dissemination, however, was only informal mention by World Bank missions during JIWMP supervision missions to provinces in Java. Later in 2001, a Netherlands grant for US$10 million entitled, "Indonesia Water Resources and Irrigation Reform Implementation Project" (IWIRIP), was begun under World Bank management to introduce reform agenda piloting to eight off-Java provinces. In addition, national workshops to discuss piloting of empowered WUAs, a new ISF and financing methods for irrigation discussed the reform agenda with about 13 provinces in attendance. Late in 2001, a National Water Forum was established as a result of the KimPrasWil Minister's initiative to discuss the reform agenda along with provincial public consultations organized by the Task Force. In October 2001, MoHARA and the Task Force organized a workshop in Jakarta to develop an implementation framework for irrigation management reform through WUA empowerment and turnover to WUAFs under IWIRIP. The invitees to this workshop included representatives from kabupaten parliaments, thus further disseminating irrigation reform concepts.

The "propenas" law. The major breakthrough in dissemination and commitment to reform occurred in November 2000 with the issue of Law 25 of 2000 regarding the National Development Program (Propenas). The Propenas law resulted from a 1999 MPR decree whereby the implementation of the GHBN for 1999-2004 should be contained in a 5-year Propenas containing detailed and measurable policies to realize the goal of national development. The Propenas Law is regarded as the implementation basis and guideline for the government and other state administrators for the period 2000-2004. Detailed policy prescriptions for water resources and irrigation conforming to the reform agenda are contained in chapter IV on "Economic Development" under the heading "Alleviating Poverty and Fulfilling the Basic Needs of the People." As will be seen below, the Propenas covers each aspect of the reform agenda and requires its attainment of its objectives by 2004.

The program to develop and manage irrigation includes the following objectives: a) reorganization of the duties and roles of the central and regional governments managing irrigation systems through delegating decision-making authority to community organizations, b) empowered community water-management organizations to improve water system operations by accepting wider responsibility for irrigation management, c) improved delegation of authority in irrigation network management to communities as the water manager, and d) restructured financing of irrigation network O&M, rehabilitation and improvement. The main activities to achieve these objectives are to include, inter alia: a) reorganizing central and regional governments in the context of creating self-reliant management of irrigation networks by the community, b) empowering communities for water management by giving the widest authority to people for executing self-reliant and democratic irrigation network management systems, c) delegating authority in a democratic manner to relevant community organizations, and d) continuing irrigation-network financing reforms based on the aspirations and participation of community organizations in partnership with regional governments.

The program for developing and managing water resources is aimed at increasing the utilization and productivity of water resources by realizing integrated management that ensures renewal capability of water resources and to restructure various institutions and legislation. Its objectives are: a) realizing restructuring of institutions, regulations and water-resources management that uphold fair water-use rights; and b) increased efficiency, effectiveness and self-reliance in O&M and preservation of water intake infrastructure and natural water resources. In order to attain these objectives, the Propenas call for: a) reform of the roles and responsibilities of the central and regional governments, as well as the private sector and society, in the management and conservation of water resources, b) formation of an agency for coordinating water resources development policies at the national and provincial levels, c) amendment of UU 11/74 and its regulations and institutions to conform to UU 22/99 and UU 25/99, d) formation of the network and institutions for managing the collection of hydrology data at the national and provincial levels and, for preparing and operating the decision-support system that can facilitate effective and efficient management of water resources, e) revision of government regulations regarding the management of river basins, especially those in a critical condition, f) formation of corporate entities to for integrated management of river basins from the upstream to the downstream areas, g) implementing the integrated conservation of surface water and groundwater, h) control of surface water pollution through regulation and enforcement, specifically in catchments, urban and industrial areas, and i) conservation of river-basin functions so that the basins can be conserved while increasing their utilization.

The Role of the Water Sector Donor Group

The reform process has been positively affected by the informal Water Sector Donor Group originally convened by the World Bank and now under FAO chairmanship. The existence of this group reinforced the actions of the World Bank supervision team and made it clear to the government that all donors were interested in a successful outcome of the reform agenda. Such support was particularly evident at the 2000 CGI meeting in Tokyo where donors expressed their appreciation of the WATSAL operation. Material assistance was also forthcoming: JBIC and ADB funded consultant support for the Task Force while the EU, GTZ and the Netherlands initiated projects, based on the institutions ensuing from the reforms. ADB is now finalizing a "Participatory Irrigation Sector Project" based on the irrigation-management reforms.

Outcomes of the WATSAL Reform Process to Date, Risk Assessment and Lessons Learnt

Impact of Reform Piloting

Irrigation management reform piloting. Since 2000, the most gratifying impact of the reform agenda has been the development of a participatory irrigation management approach originating from Inpres 3/99 and piloting activities supervised by the Task Force under both the World Bank-supported JIWMP and the Netherlands-supported IWIRIP. Field-tested procedures have been developed to date for: a) participatory design and construction whereby all designs are developed in consultation with WUAs and WUAFs play a role in construction, b) formation of over 300 empowered WUAFs involved in O&M of their secondary systems, c) a field-testing of a framework for irrigation management transfer based on Service Agreements between WUAFs and the irrigation agency, d) establishment of an NGO Consortium which is responsible for recruiting, training and supervision of Community Organizers to help with capacity building of WUAFs, e) collection of irrigation management fees by WUAs which are used for O&M expenses, and f) field experiments with simple WUA Federation financial-assistance mechanisms that serve as a precursor to the Kabupaten Irrigation Improvement Fund concept.

By December 2001, 39 districts in Java, Sumatra, Sulawesi and West Nusatenggara had issued memoranda of understanding to adopt the reform program and establish an irrigation planning unit. Federated WUAs had been established in 227 irrigation systems, with a total area of 353,778 hectares. Legal transfer of authority had been implemented in 53 schemes in Java and 26 schemes had made service agreements between scheme-level WUAs and the kabupaten government and/or contractors. With the December 2001 issue of a new PP for Irrigation, the country is now ready to apply field-tested procedures for participatory irrigation management. In fact, ADB is finalizing a project based on applying the new PP and the above procedures.

Basin management piloting. The reform agenda has had little impact on basin management so far. Only one new river-basin corporation is in the process of being established. No PTPA or PPTPA has been converted into a provincial or basin water resources council as the legislation has not been issued. Balai PSDA have been established in the key river basins of eight provinces (only two basins in each of five off-Java provinces). Establishment of Balai PSDA and their improvement as viable organizations are really attributable to JIWMP and IWIRIP and not driven by the reform agenda. Similarly, these projects have also brought about conceptual improvements in basin-management planning. They have also introduced the concept of making Balai PSDA basic hydrographic units and keeping Provincial Hydrological Units as oversight agencies to ensure quality of data.

The Completed WATSAL Second Tranche Outcomes

As of August 2002, the number of completed outcomes is not large. Many Task Force drafts are available but these have not been processed and issued. The most significant outcome representing

a major reform is the new PP for Irrigation. No reforms regarding river-basin management have been processed. Each of the completed outcomes is discussed below.

- *Presidential Decree for the Establishment of a Revised "Interministerial Coordination Team (Tim Koordinasi) for Water Resources Management" and Decrees of the Coordinating Minister for Economic Affairs (Menko EKUIN) for Establishment of Its Secretariat and Working Groups for Water Resources Sector Policy Reform Implementation.* This is not a reform as a Tim Koordinasi was established in January 1999. Instead it accommodates the new sector structure and has all the coordination functions necessary for the water sector. It is chaired by the Coordinating Minister for Economic Affairs with the Minister of National Planning as Vice Chairman and the KimPrasWil Minister as executive chairman. The team has ten Ministers and two secretaries (the Deputy Chairman Bappenas for Production/Infrastructure and the DG of Water Resources). The Tim Koordinasi is supported by a large Secretariat having a Steering Committee of sixteen Echelon 1 officials from various ministries. The Steering Committee is supported by a Supervision Team and four Working Groups similar to those of the WATSAL Task Force (institutions, river basin, water quality and irrigation). Upon issue of the new water resources law, the new Tim Koordinasi is expected to become a National Water Council with stakeholder membership.

- *Coordinating Minister of Economic Affairs Decree for Direction of a National Water Resources Policy (NWRP).* This is not quite the type of document originally envisaged as a presidential decree based on recommendations of the National Water Council; however, it is the first time a declared set of national policies for the water sector has been enunciated and issued operationally. This policy is expected to be further elaborated by the National Water Council. The NWRP has vision and mission statements followed by 75 policies that cover the following six areas: a) water resources management, b) water resources conservation, c) control of water damage, d) empowerment and involvement of the community and private sector, and e) increasing transparency and availability of water resources data and information. Compared to earlier policy statements, this document is quite revolutionary in its integrated and sustainable approach to water resources management.

- *MoU between 14 Director General-Level Line Agency Managers Endorsing the Concept Paper for a National Integrated Sector Data Network, Its Framework, Procedures and Implementation Arrangements.* The concept paper was accepted by the WATSAL Steering Committee but the World Bank required some form of commitment that the agencies involved would continue to work toward an integrated data network by setting up its administrative framework within the government structure as well as planning for the procurement of its hardware. This was accomplished by the MOU.

- *Decree of Director General of Water Resources for "Establishment of Water Resources Data and Information Unit" in the Ministry of Settlements and Regional Infrastructure (KimPrasWil).* With ADB support, a Water Resources Data Center was established in KimPrasWil linking its central data base and 400 PCs. The primary function of this system, in addition to data, is to provide standard reports and maps for regular users. The web-based applications include: a) an Irrigation System Inventory, b) Natural Disaster and Flood

Monitoring, c) Water Resources Inventory, d) Hydromet Infrastructure Inventory, e) Project Monitoring, and f) Sector Information.

- *Decree of Minister of KimPrasWil for "National Hydrology Management."* In addition to a clause in the new water resources law supporting strengthening of hydrology activities, the new PP on Water Management will explicitly support hydrology management. The KimPrasWil decree gives the necessary legal basis for its funding, delegation of authority, organizational structure, data collection and quality, as well as recognizing the hydromet network as an infrastructural asset to ensure its sustainable O&M funding.

- *Decree of Minister of KimPrasWil* - "Technical Guidelines for Preparation of Regional Regulations on Hydrology Management." Two guidelines are issued for regional government management of hydrology.

- *Completion of Establishment of Provincial Hydrological Units in Ten Provinces and Balai PSDA in Key Basins of Eight Provinces.* This requirement is essentially completed.

- *Government Regulation on "Water Quality and Pollution Control."* The new PP 82/01 for the first time provides for the regulation of all polluters (including municipalities and mining) and for levying wastewater discharge fees to support water quality monitoring and basin level water quality management. Its other provisions are similar to the framework in the old PP 23/82 that it replaces.

- *Issue of the Government Regulation for Irrigation, Minister of Home Affairs & Regional Autonomy Decree on "Guidelines for Establishment and Empowerment of Water User Associations" and Minister of KimPrasWil Decree on "Irrigation Management Transfer."* The new PP with its accompanying Guidelines for provincial and kabupaten legislation and procedures is by far the most significant, real, holistic and integrated reform accomplished so far. It completes a major commitment of Objective 4 of the WATSAL Letter of Sector Policy and Policy Matrix. It is however, still operationally incomplete as all important decrees/ministerial guidelines on restructuring of regional government irrigation agencies and new irrigation financing mechanisms, have still to be cleared by both national and regional governments. The principal changes introduced are:

  a. *Principles of irrigation management.* Irrigation management should give farmers' interests priority with wider authority to WUAs as the decision maker and main actor in managing irrigation schemes following the principle of "one irrigation scheme, one integrated management" taking into account upstream and downstream interests within a network. Increasing farmer income is set as a main goal and not rice cultivation for food self-sufficiency.

  b. *Irrigation management institutions.* WUAs are recognized as institutional actors along with the government and may be federated up to the scheme level to arrange irrigation as one management unit. The management of irrigation in a kabupaten shall be carried out by establishment of an Irrigation Commission for both improvement of water supply and recommending budget allocations for kabupaten irrigation management.[57] Where an irrigation network is multi-functional, an Irrigation

Area Coordination Forum may be established for communication between the government, WUAs and other water users.

c. *Handover of authority for irrigation management.* A local government may hand over irrigation management authority to a legalized WUA in a democratic manner according to a joint agreement. Management audits shall determine whether a WUA is carrying out its devolved irrigation management authority and if the audit is negative, the government may repossess its handed-over authority. WUAs thus obtain the right to determine water-service objectives and procedures and to decide who will provide the services and under what terms and conditions. In each system, the WUAs will determine the irrigation-service plans, budgets, level of service fees and collection procedures. They will also determine what maintenance, repair, upgrading and rehabilitation works are done within the system. WUAs have the authority to impose sanctions to the extent of cutting off water services or fining farmers for the full cost of damages caused. WUAs are also protected against members converting land to nonirrigated uses by government penalties for conversion of irrigated land to other uses.

d. *Empowerment of WUAs.* Local governments are required to empower WUAs by improving their capabilities and may render all technical and financial assistance by written agreement in accordance with national and regional policy. The local governments may also be mediators or facilitators in settling problems causing dysfunction in WUAs.

e. *Regulatory pattern of irrigation.* Specific water use rights are to be given to WUAs for a period of 5 years taking into account water sources, other users, etc. All water-supply planning and distribution are to be established by consensus between WUAs and the Irrigation Commission, taking into consideration all stakeholders in a fair and equitable manner. Networks may not be extended without agreement of WUA members.

f. *O&M and rehabilitation.* While WUAs will have authority and responsibility for O&M and rehabilitation of the network area under their jurisdiction, local governments will provide the required assistance and facilities.

g. *Asset management.* Asset management planning and inventory will be required for networks handed over to WUAs and networks managed by the government. In the latter case, the WUAs will be a party to the system used by the government and all planning will be discussed by the Irrigation Commission.

h. *Financing.* Financing of network development will remain a government responsibility while financing of irrigation management shall be the responsibility of WUAs in their areas of jurisdiction. However, the government will assist the WUAs with an irrigation

[57]Scheme-level WUAs will also be represented in river-basin stakeholder councils under other legislation. Planners envision that scheme-level WUAs will form networks for information exchange, political lobbying and support services at the district, provincial and even national levels.

management fund, which will be awarded on the basis of fair and transparent criteria and WUA requests submitted to the Irrigation Commission.

Current WATSAL Reform Risk Assessment

Review of original risks. Some of the original WATSAL risks perceived by the World Bank are still current. Sector interest groups within the national government opposed to reforms such as participatory irrigation management are getting stronger and trying to assert themselves. Luckily, the regional government authorities—with the support of MoHARA—seem to be interested in the irrigation reform as a means of implementing regional autonomy. The final test is still to come when the legislation for redefining the roles of irrigation agencies to provide technical and financial support to WUAs will have to be cleared. As the remaining period for disbursement of the third tranche is only about 10 months, pressure will mount to just issue the necessary pieces of paper without attention to their exact content or without a bona fide intention to implement their provisions. Thus concern for disbursement of the remaining US$150 million of the loan may still be the government's principal interest. If this takes place and, to the extent that the World Bank will not be willing to compromise on reform provisions, the WATSAL will fail due to the Bank's refusal to disburse. This would be a very bad outcome for the prestige of both Indonesia and the Bank and disastrous for the motivation of all Task Force members and other officials who have made such a major effort in good faith to prepare the reform concepts and legislation.

New risks. A number of additional risks have arisen during the reform process which may affect the completion of the third tranche outcomes. These risks include:

- Three out of the four new river-basin corporations may not be established because of the difficulty of reaching agreement about revenue sharing between provinces and kabupaten and the desire for provincial control of a potential revenue source.

- The transaction costs of developing financial incentives (such as corporate tax deductions) for industrial investment in pollution abatement facilities may be too high and such incentives may never be agreed to.

- In practice, stakeholder representation may be a "toothless" arrangement unable to really confront powerful vested interests (such as a power company in the Ombilin basin).

- The Task Force may no longer be motivated to work hard because many of its products have been, or will be, altered to suit conservative interests.

Thus, on the basis of circumstances beyond anyone's control, the World Bank may be forced to compromise on the river-basin corporation and pollution abatement incentive outcomes in order to disburse WATSAL's third tranche.

Reform Process Conclusions to Date

A number of important conclusions and lessons may be learnt from the WATSAL concept and its implementation. These are the following:

- *Effective sector reform requires a very high level "Champion" with a perception of crisis.* The comparison between the successful far-reaching irrigation management reform in Andhra Pradesh, India and the limping reform in Indonesia is instructive. In Andhra Pradesh, irrigation costs played a large role in a fiscal crisis during the tenure of a Chief Minister who subscribed to a community participation ideology. Having seen a demonstration of what WUAs can achieve, he proceeded to enact a model "Farmer Management of Irrigation Systems Act" despite opposition from the irrigation bureaucracy and personally supervised its implementation. In Indonesia, the sector-reform champions are middle-level officials who do not receive strong support in the higher levels of the lead sector ministry while their strong support comes from peripheral ministries and agencies that do not have the power to really confront the lead ministry. The lead ministry does not have an overall perception of the need for reform and goes along with those reforms that do not strongly threaten its bureaucratic and staff interests. Its concerns of loss of power and budgets as a result of the government decentralization, far exceed its interest in improved performance and professional improvement. Consequently, the reform process is driven more by the "financial" carrots of loan disbursement and World Bank pressure than by a genuine motivation within the government. It is fortunate that decentralization has developed regional power bases that see the reform agenda as increasing their authority and are willing to try new approaches even if the national legislation is not forthcoming.

- *A comprehensive and lengthy adjustment operation is riskier than several short operations but unavoidable under the particular circumstances of Indonesia.* WATSAL is a simultaneous reform lasting 3 years instead of its planned 18 months. The causes for delay lie in the politico-economic turmoil that has wracked Indonesia since 1998. It could be argued that a less-ambitious approach would have been to have two or three sequential adjustment operations starting with the all-important irrigation management first. However, in retrospect, this alone has turned out to take 3 years.[58] A follow-up reform for water-resources management would also take another 3 years in view of the need to change a basic law and its regulations. However, there are close symbiotic relationships between the irrigation reforms and those of water-resources management; separate operations would mean that these relationships would have been lost with both areas having weaker reforms. In retrospect, the need for sector reform was so great in 1998 and the national reform atmosphere so strong, that the decision to embark on one large holistic reform agenda was justified. Allowing for the unforeseen mitigating circumstances of the uncertainties and difficulties created by governmental decentralization, responsibility for failure to accomplish the reform (if this occurs) must rest squarely on MPW/KimBangWil/KimPrasWil and less on the successive Cabinets. While the name of the ministry may change, the lead officials

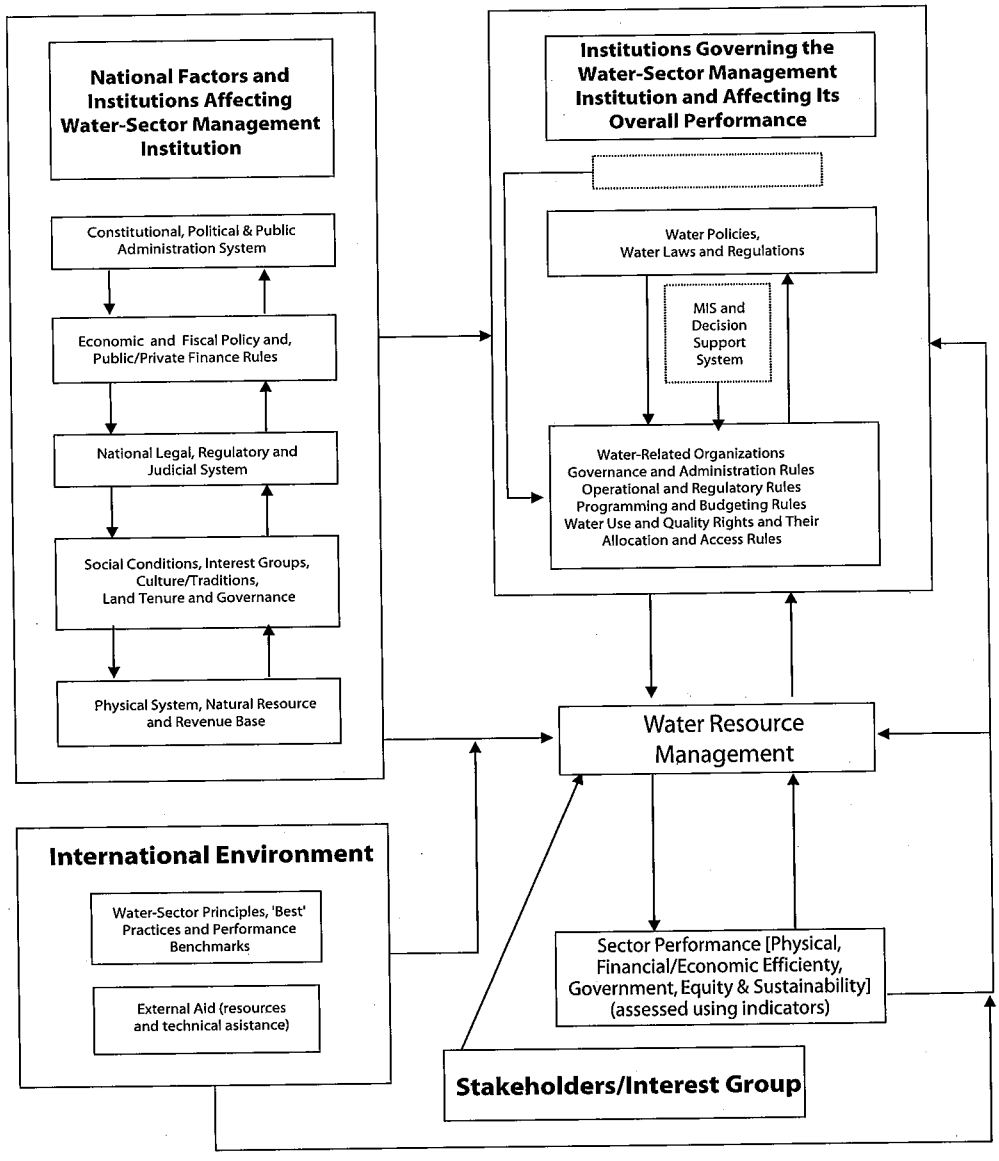
[58]The author started the irrigation management reform in Andhra Pradesh on behalf of the World Bank in 1994 and it only came to fruition 3 years later in 1997!

by and large do not. It can only be hoped that the "winds of change" will not die down after WATSAL closure and that reform will continue, albeit at a much slower pace.

- *A full-time task force would have been preferable but impossible.* One of the most pleasant surprises of the reform process has been the emergence of policy-analysis ability inherent in many Task Force members and some national consultants. This vindicates the Government-Bank approach of not using full-time foreign consultants to do conceptual work, but relying on experienced Bank consultants and experts for guidance and advice to the Task Force. It goes without saying that a select core group of about 20-25 people working full-time for the Task Force could have yielded quicker and possibly better results. Unfortunately, the right people are the best trained and most professional staff in the civil service and it is inconceivable that, in a country where such talent is in short supply, they could be removed temporarily from their duties. It should also be remembered that ideas take time to gel, especially where a process of deliberation is needed to change entrenched opinions.

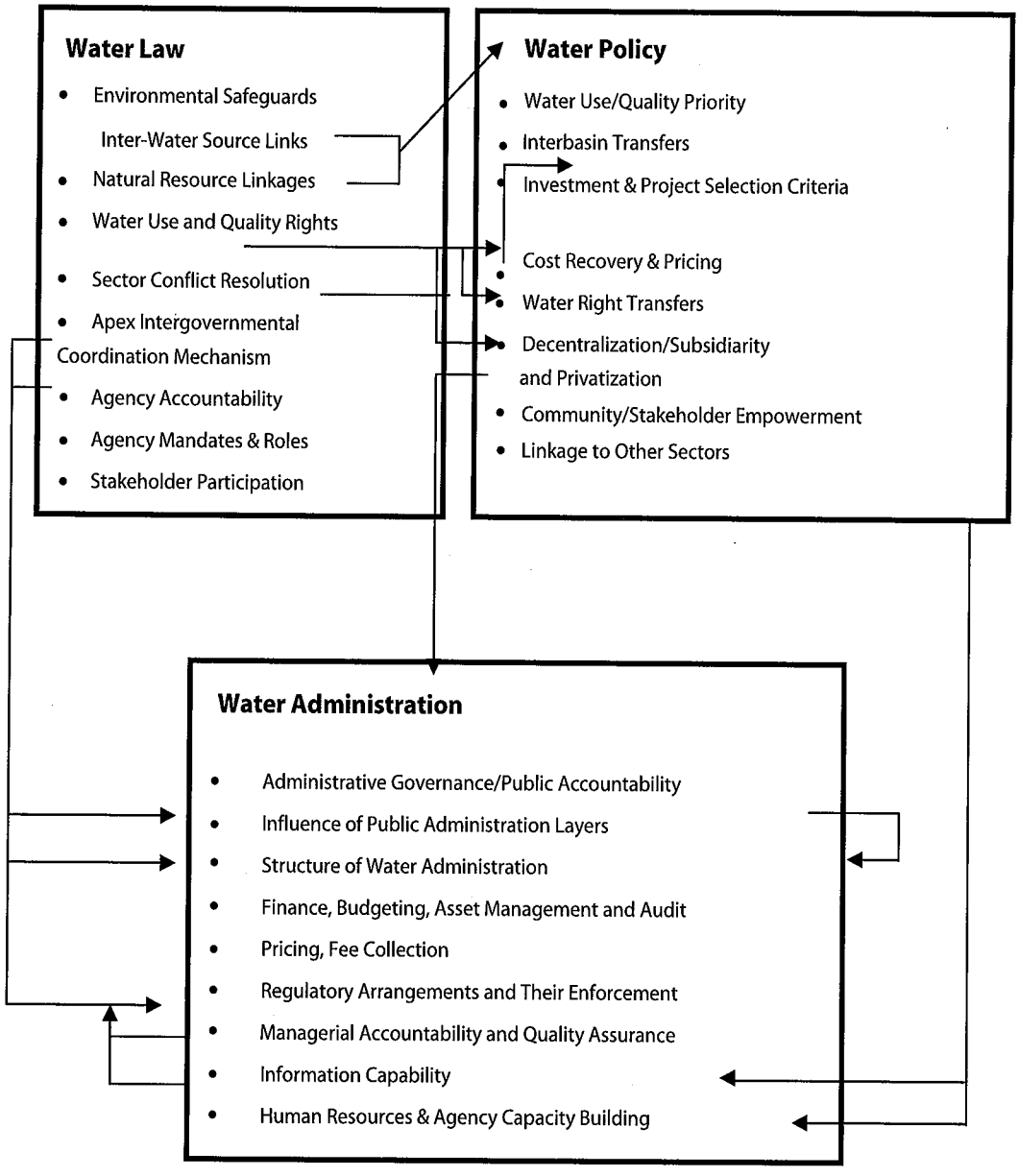
ANNEX 1A

Linkages between water-sector management institutions, their performance and their environment.



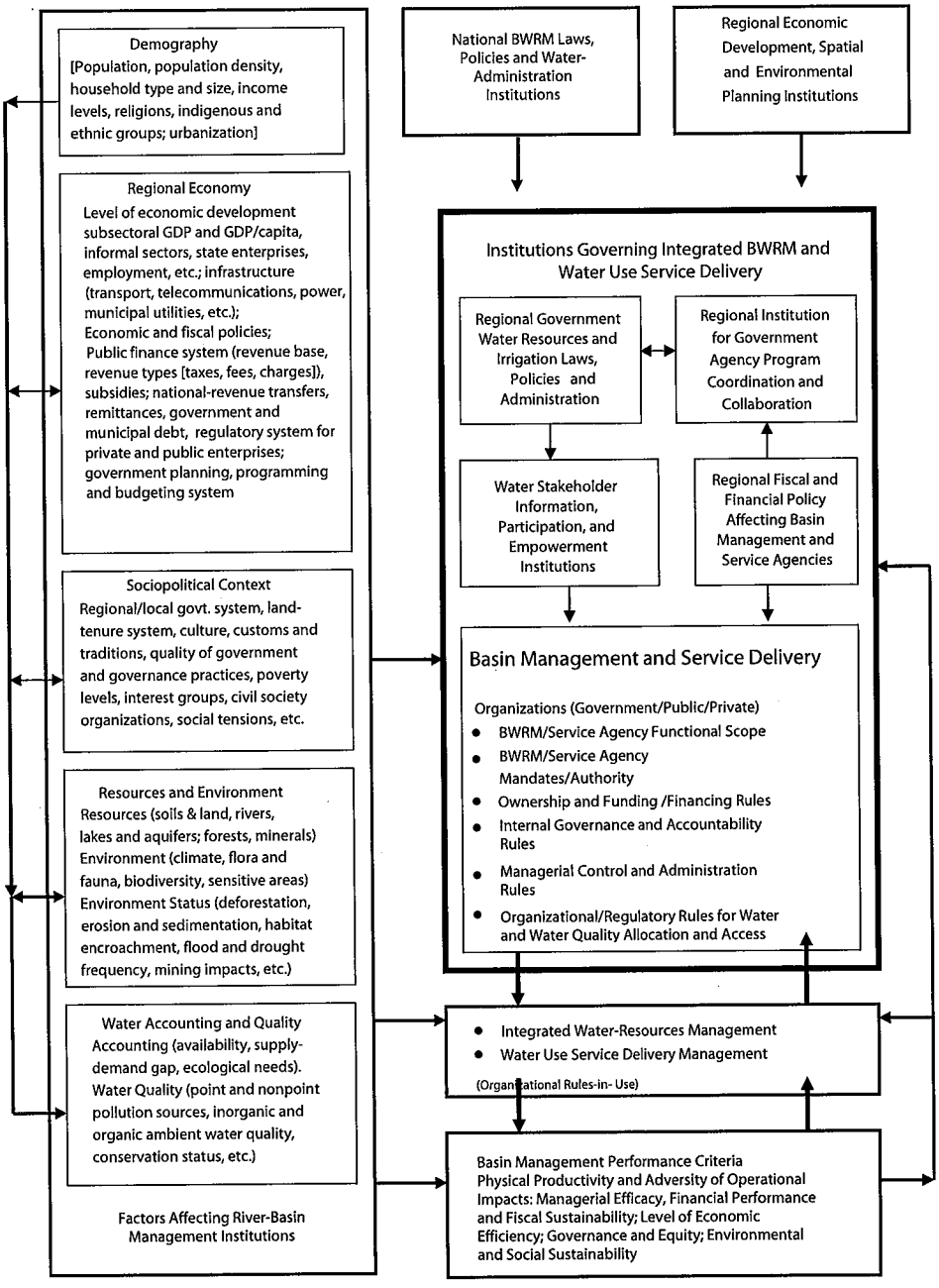
ANNEX 1B

Water-sector institutional interlinkages.

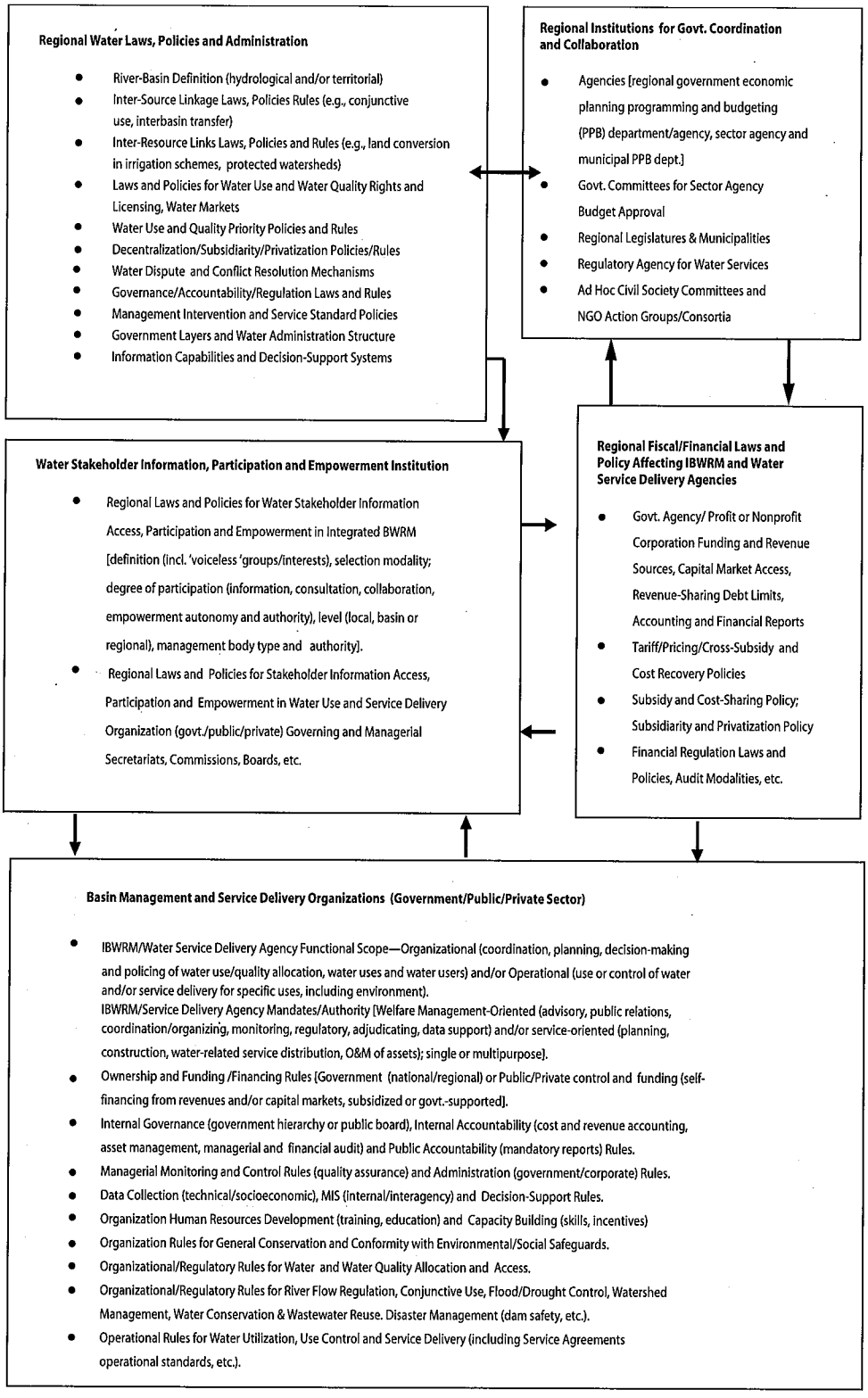


ANNEX IIA

Operational linkages between basin-management institutions, their external environment and integrated BWRM and service delivery performance.



ANNEX IIB


Regional Water Laws, Policies and Administration
River-Basin Definition (hydrological and/or territorial)
Inter-Source Linkage Laws, Policies Rules (e.g., conjunctive use, interbasin transfer)
Inter-Resource Links Laws, Policies and Rules (e.g., land conversion in irrigation schemes, protected watersheds)
Laws and Policies for Water Use and Water Quality Rights and Licensing, Water Markets
Water Use and Quality Priority Policies and Rules
Decentralization/Subsidiarity/Privatization Policies/Rules
Water Dispute and Conflict Resolution Mechanisms
Governance/Accountability/Regulation Laws and Rules
Management Intervention and Service Standard Policies
Government Layers and Water Administration Structure
Information Capabilities and Decision-Support Systems
Regional Institutions for Govt. Coordination and Collaboration
Agencies [regional government economic planning programming and budgeting (PPB) department/agency, sector agency and municipal PPB dept.]
Govt. Committees for Sector Agency Budget Approval
Regional Legislatures & Municipalities
Regulatory Agency for Water Services
Ad Hoc Civil Society Committees and NGO Action Groups/Consortia
Water Stakeholder Information, Participation and Empowerment Institution
Regional Laws and Policies for Water Stakeholder Information Access, Participation and Empowerment in Integrated BWRM [definition (incl. 'voiceless 'groups/interests), selection modality; degree of participation (information, consultation, collaboration, empowerment autonomy and authority), level (local, basin or regional), management body type and authority].
Regional Laws and Policies for Stakeholder Information Access, Participation and Empowerment in Water Use and Service Delivery Organization (govt./public/private) Governing and Managerial Secretariats, Commissions, Boards, etc.
Regional Fiscal/Financial Laws and Policy Affecting IBWRM and Water Service Delivery Agencies
Govt. Agency/ Profit or Nonprofit Corporation Funding and Revenue Sources, Capital Market Access, Revenue-Sharing Debt Limits, Accounting and Financial Reports
Tariff/Pricing/Cross-Subsidy and Cost Recovery Policies
Subsidy and Cost-Sharing Policy; Subsidiarity and Privatization Policy
Financial Regulation Laws and Policies, Audit Modalities, etc.
Basin Management and Service Delivery Organizations (Government/Public/Private Sector)
IBWRM/Water Service Delivery Agency Functional Scope—Organizational (coordination, planning, decision-making and policing of water use/quality allocation, water uses and water users) and/or Operational (use or control of water and/or service delivery for specific uses, including environment).
IBWRM/Service Delivery Agency Mandates/Authority [Welfare Management-Oriented (advisory, public relations, coordination/organizing, monitoring, regulatory, adjudicating, data support) and/or service-oriented (planning, construction, water-related service distribution, O&M of assets); single or multipurpose].
Ownership and Funding /Financing Rules [Government (national/regional) or Public/Private control and funding (self-financing from revenues and/or capital markets, subsidized or govt.-supported].
Internal Governance (government hierarchy or public board), Internal Accountability (cost and revenue accounting, asset management, managerial and financial audit) and Public Accountability (mandatory reports) Rules.
Managerial Monitoring and Control Rules (quality assurance) and Administration (government/corporate) Rules.
Data Collection (technical/socioeconomic), MIS (internal/interagency) and Decision-Support Rules.
Organization Human Resources Development (training, education) and Capacity Building (skills, incentives)
Organization Rules for General Conservation and Conformity with Environmental/Social Safeguards.
Organizational/Regulatory Rules for Water and Water Quality Allocation and Access.
Organizational/Regulatory Rules for River Flow Regulation, Conjunctive Use, Flood/Drought Control, Watershed Management, Water Conservation & Wastewater Reuse. Disaster Management (dam safety, etc.).
Operational Rules for Water Utilization, Use Control and Service Delivery (including Service Agreements operational standards, etc.).

ANNEX IIIA

The World Bank's Water Policy: Features of National Water Sector Strategies and Policies.

Comprehensive Management Framework		
National-Level Strategies	***Regional/Basin Level***	***Projects and Programs***
A national water strategy should reflect social, economic, and environmental objectives and be based on an assessment of the country's water resources *potential (developmental availability and ambient quality)*. The strategy should spell out priorities for providing water services; establish policies on water rights, water pricing and cost recovery, public investment, and private-sector participation; and set environmental protection and restoration goals. Strategy formulation should be transparent and participatory, and based on accurate information. It should be informed by regional/ basin-level plans.	Investments, policies, and regulations in one part of a river basin, or in one sector, affect other activities throughout the basin. Decisions should be formulated in the context of a broad strategy and fully consider cross-sectoral *linkages, as well as socio-technical*, ecosystem, socioeconomic, *sociocultural and sociopolitical* issues. Formulation of plans should be transparent and participatory, and based on accurate/*reliable technical, economic, social and environmental* information *and basin water accounting*.	*Projects and programs should be subject to economic and financial analysis*. Cross-sectoral and adverse impacts of specific infrastructural projects and programs should be *holistically* assessed prior to implementation. Adverse impacts on communities and ecosystems should be assessed, minimized and mitigated to the *maximal feasible and affordable* extent possible. Decision making should be transparent and participatory, and based on accurate information. Ideally, projects and programs should be assessed in the context of a broader river basin and national water strategy.

Institutional and Regulatory Systems		
Legal, Policy and Planning	***Regulatory Framework and Management***	***Water-Service Provision***
Appropriate institutional structures at the national and regional levels to coordinate the formulation and implementation of policies for improved water management, water-service delivery, public investment programs and, drought and disaster, —e.g., flood-planning and response. Policy, planning, and conflict resolution institutions at the river-basin level should also be appropriate. Stakeholders actively influence policy decisions, and policymakers are ultimately responsible/accountable to the public.	Effective, accountable and well-managed agencies for the regulation of water services/uses and management of water resources. Water services to be regulated with respect to pricing and quality of service. Water-resource management responsibilities include, inter alia: setting standards, issuing permits, basin operations, and the collection and analysis of data. Regulatory and management decisions should take place at the lowest appropriate level with stakeholder participation.	Water-service organizations should be effectively managed (using needs-based programming and budgeting, quality assurance and asset management), financially and operationally autonomous—within an appropriate regulatory and auditing framework. Water services should be decentralized to the lowest appropriate level. Water-service customers and users should participate in the formulation of management policy decisions.

Economic and Social Issues		
Financing and Subsidies	***Water-Service Charges***	***Poverty Alleviation***
Public-sector financing should be focused on public goods. Water-service organizations should be partially self-financing and use private capital markets; subsidies should be transparent and justified; subsidy programs should not create perverse incentives.	Water-service organizations should be financially autonomous and operate under a hard budget constraint with explicit cost-recovery targets. Service-charge mechanisms should promote incentives for performance by providers and efficiency by users. Cross-subsidies between users and regions should be minimized, and equity pursued.	Special efforts should be directed to meeting the water supply and sanitation needs of the poor and redressing the neglect of the rural poor. Policies that undermine subsistence agricultural or fisheries should be carefully evaluated and, where necessary, there should be adjustments and compensation.

*Note:*The phrases in *italics* are the author's modifications of a Bank Water Policy Analysis Matrix originally prepared by Greg Browder.

ANNEX IIIB

World Bank Assessment Criteria for Sector Policy and Strategy Reform Interventions[59]

Comprehensive Management

A. National/Regional Level

- Based on sound assessment of water resources and alternative development scenarios?
- Environmental/ecological issues an integral part of the framework?
- Stakeholders fairly represented in framework formulation?
- The framework addresses policy issues, such as water rights, water pricing, cost-recovery, private-sector participation, capacity building, etc.?
- A clear relationship to national/regional goals and policies?

B. Regional/Basin Level

- Based on sound assessment of water resources and alternative development scenarios?
- Environmental/ecological issues an integral part of the framework?
- Stakeholders fairly represented in framework formulation?
- The framework addresses policy issues, such as water rights, water pricing, cost-recovery, private-sector participation, capacity building, etc.?
- A clear relationship to the national/state framework?

C. Projects

- Based on a sound assessment of water resources?
- Environmental/ecological issues an integral part of project planning?
- Project embedded in a broader regional/basin and national/state frameworks?
- Project planning and review conducted in a transparent and participatory manner?

[59]This is a modification of the list prepared by Greg Browder (WB) for assessing ongoing and proposed World Bank projects and programs for conformity with the Bank's Water Policy.

2. Institutional Development

A. Legal and Policy

Water-Resource Policy and Legal Interventions

- Coordination mechanisms present across agencies and jurisdictions?
- Major stakeholders (water users, civil society, NGOs, etc.) participate in policymaking, agency and sector performance oversight?
- The policy institutions have sufficient power to be effective, i.e., budget authority, legal mandates, political backing, etc.?
- Policy institutions supported by competent water-management agencies?

Water-Service Policy and Legal Interventions

- Effective regulatory framework: pricing, service, environmental standards, etc.?
- Water-service organizations operate on a commercial basis?
- Explicit policy statements regarding service pricing, subsidy levels, etc.?
- Water-service organizations appropriately decentralized?

B. Management and Regulation

Water-Resource and Environmental-Management Agencies

- Agency's monitoring and planning capability strengthened?
- Collaboration with other agencies involved in water management, i.e., environmental, fisheries, agriculture?
- The agency has an outreach/public education program?
- Plans and decisions reviewed and approved by an appropriate policy institution?
- If the agency provides infrastructure (i.e., bulk water supply or flood control), is this unit a distinct financial and operational entity, and separated from planning and regulatory responsibilities?

Water-Service Regulation Bodies

- The bodies set cost-recovery, tariff, and accounting policies?
- The bodies monitor the performance the financial performance of water service organizations?
- The bodies review and approve tariff proposals for water-service organizations?

C. Water-Service Organizations

- The organization is financially and operationally autonomous, and operating on a commercial basis?
- The organization is under an appropriate regulatory framework for pricing and service quality?
- The water-service organization appropriately decentralized?
- Water-service customers and users have a voice in management decisions?

3. Economic and Social Issues

A. Financing and Subsidies:

- Subsidies explicit and justified?
- Cost-sharing arrangements between government agencies and between public and private interests based on a negotiated agreement?
- Private sector provider financing terms explicit?
- The water service organization/agency contributes some degree of self-financing?
- Nonpublic sources of financing used (private banks, bonds, equity markets, etc.)?

B. Water-Service Charges:

- Explicit cost-recovery targets?
- A sound financial analysis which examines the need for tariff increases and the impact on the financial health of the organization/agency?
- The tariff structure analyzed with respect to promoting water use efficiency and equity?
- The collected revenues put back into service provision?

C. Disadvantaged Groups

- A social assessment of the people affected by the project?
- If there is a project component targeted at the poor (i.e., low-cost WS&S) does it take the special needs of affordability, appropriate technology, community participation, etc., into account?
- If resettlement is involved, is there an adequate resettlement plan?
- When relevant, are the specific needs and participation of women considered?
- When relevant, are the specific needs and participation of indigenous groups considered?

ANNEX IIIC

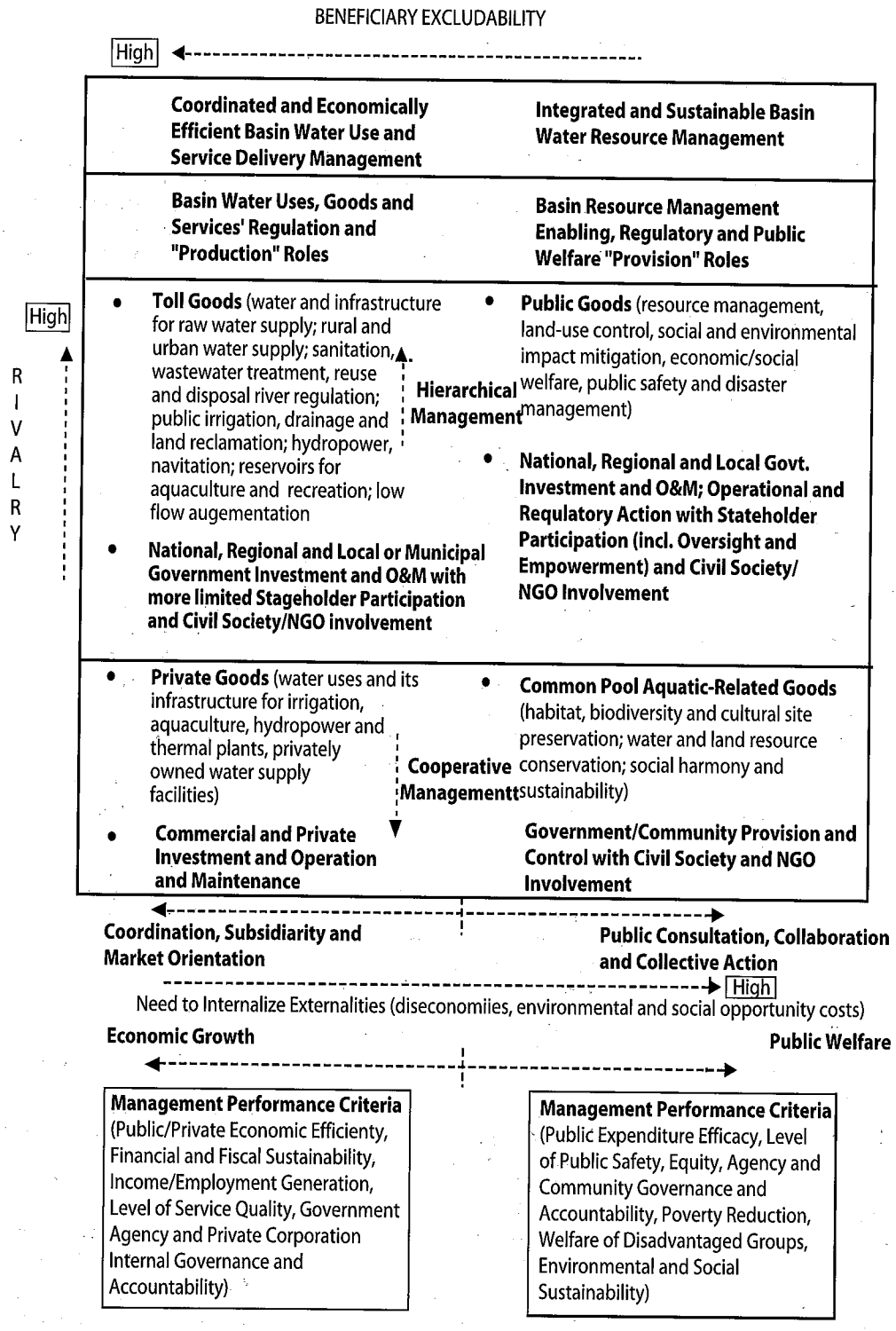
Policies, strategies, plans and organizations for IWRM.

Comprehensive Management Framework		
National-Level Policies and Strategies	Basin-Level Programs (includes surface water and groundwater allocation, utilization and conservation)	Projects
• National/Regional Government Water Resources Strategy and Implementation Action Plan • National/Regional Water Sector and/or Subsector Investment Plans (infrastructural rehabilitation, development, conservation) • National Water Recycling and Reuse Plan • National Flood Control/Drought/ Disaster Management Plans • National/Regional Water-Sector Management and Personnel Capacity Building Plans	• Basin Water-Resources Policy • Basin Water-Resources Strategy • Basin Water-Resources Management Plan (BWRMP) and BWRMP Implementation Plan (includes watershed treatment and groundwater conservation plans) • Regional Dam Safety Plan	• Basin Water-Resources Plan (for planning water-resources infrastructural development and rehabilitation, as well as infrastructure for disaster protection, dam safety, watershed treatment, water and habitat conservation, and, water treatment, reuse and quality control
Institutional and Regulatory Systems		
Legal, Policy & Administrative Framework and Agency Performance Oversight	Regulatory Framework and Management	Water-Service Providers
Water Resources: • National/Regional Water Resources Policy, Decrees and Investment Criteria • National/Regional Water Laws and Regulations • National/Regional/Basin Water Councils *Water Services* • Water Service and Regulatory Organization Laws and Regulations • Policy Statements and Government Decrees	*Water-Resource Management* • Water-Resource Planning/ Management Agencies • Regulatory and Management Agencies for Environmental Protection and Conservation • Regulatory Commissions (e.g., State Enterprises, and for Dam Safety, Water Allocation/Licensing and Pricing, Water Markets) • International Water Sharing/ Management Bodies • Conflict Resolution Bodies and Arrangements *Water Service Regulation* • Public Utility and Water Tariff Commission	• Urban Water Utilities • River-Basin Corporations • Irrigation Water-User Organizations • Rural and Irrigator Water-User Groups • Watershed Protection Groups/ Organizations • Hydropower Companies • R&D Organizations and Laboratories • Specialized Private Services (mapping, data collection, consultants, contractors)
Economic and Social Issues		
Charges, Fees, Subsidies and Financing Policy	*Water Service Charge Policy*	*Programs for Disadvantaged Groups*
• Subsidy Types and Cross-Subsidy Incidence • Public-Sector Cost-Sharing Arrangements • Infrastructure Financing Terms and Conditions	• Water Resources Cost Recovery: Charge and Service Fee Affordability and Incidence • Financial Management and Tariff Structure for Water Service Organizations	• Low Cost WS&S for Rural and Urban Poor • Displacee Resettlement and Rehabilitation • Gender Equality Promotion • Welfare of Impacted Indigenous Groups

Note: This is an expanded/modified version of the Greg Browder (WB) matrix for "Assessing Project Design" Using His World Bank Water-Policy Assessment Matrix.

ANNEX IVA

Taxonomy of goods and services, policy/action arena, coordination mechanisms, actors' (organizations and stakeholders) roles and their patterns of interactions in basin water resources management and water use and service delivery management.



ANNEX IVB

Taxonomy of nature of goods and services and management activities of basin water resources management and water use and service delivery management.

Coordinated and Economically Efficient Basin-Water Use and Service-Delivery Management		**Integrated and Sustainable Basin Water Resources Management (BWRM)**	
Type of Management and Regulation	Water-Use Management and Service Delivery	Resource-Management Services and Activities	Type of Management and Regulation
**Regional/Local Enabling Legislation for*: program/ project planning and plan approval; water use and service delivery policy formulation and investment approval; water abstraction and wastewater discharge licensing; water demand management; private sector participation (concessions, leasing), water utility governance, financing and tariff regulation); irrigation management transfer; basin management service agency type, role, mandate authority, functions (incl. MIS system), governance and accountability, financing (budgeting, cost recovery); operational rules for irrigation, water supply, waste treatment, hydro-power, reuse; inter-interagency coordination. **Service Delivery Policies for*: river navigation; non-structural and demand management interventions; water tariffs; groundwater use regulation; public land acquisition and involuntary resettlement; private-sector subsidiarity (BOOT, BOO, facility lease, service concessions); pollution control standards and treatment plant technology; water saving and waste-water reuse programs. **Service Delivery Operations include:* bulk water supply, water delivery and distribution; hydropower generation and supply; navigation; land drainage and reclamation; flood control; sewerage, wastewater treatment and disposal; infrastructural planning, financing; procurement and construction, O&M; private sector and utility regulation.	***Toll Goods*** *(infrastructure for water supply, raw water treatment, distribution,disposal/treatment) Programs/Projects and Management for*: *Multipurpose Projects *Irrigation and drainage *Aquaculture reservoirs *Water supply (urban/rural) *Municipal/industrial sewerage and wastewater and effluent treatment *Effluent/residual disposal *Urban drainage and flood control infrastructure *Public hydropower *Public thermal power cooling water supply *Wastewater reuse and recycling *Desalination plants and their integration into water supply systems ***Private Goods*** *(water uses and its infrastructure) Regulation of:* *Village irrigation *Aquaculture ponds *Mining water needs *Industry and manufacture *Private hydropower *Thermal power cooling *Tourism and recreation water supply	***Public Goods*** *(economic welfare and public safety)* Management Programs for: *Increasing availability of surface water and ground-water (including low flow augmentation and intebasin water transfer projects) *Reclamation/settlement of virgin areas using water projects (wetland and delta development irrigation) *Equitable/efficient allocation of water and wastewater discharge *Ambient water quality management and control *Flood control and mitigation *Land drainage improvement *Drought mitigation *River corridor management (River flow regulation, navigation and riverbank protection works, access regulation works O&M) *Aquifer management and conjunctive use programs *Surface water and ground-water conservation *Water-related land-use control and management *Involuntary resettlement *Water body recreation *am safety regulation *Water disaster preparedness and management ***Common pool aquatic-related Goods*** *Programs and regulation for:* *Watershed management (including erosion and *sedimentation control)* *Habitat, wildlife and culture site preservation *Programs for indigenous peoples	**Regional/local enabling* legislation for BWRM planning and plan approval: BWRM policy formulation and investment approval; water use and quality rights; stakeholder participation; management agency type, role, mandate/authority, function (including data collection and MIS system). governance and accountability, financing (budgeting, cost recovery); operational rules for regulation and enforcement of water allocation and access, pollution control and water quality management; interagency coordination **BWRM intervention policies for*: nonstructural and demand management interventions; interbasin water transfer; goundwater conjunctive use; spatial planning; public land acquisition and involuntary resettlement; private sector participation and subsidiarity; nonstructural pollution control (incentives, effluent fees, discharge standards); water saving and wastewater reuse programs; watershed and estuarine management *BWRM operations include: *hydrology and water quality* monitoring; decision-support *data base operation; basin* water balance and water use accounting infrastructural *maintenance; public* awareness; reservoir, barrage and aquifer operation; real-time water allocation; agency revenue generation activities.

ANNEX VA

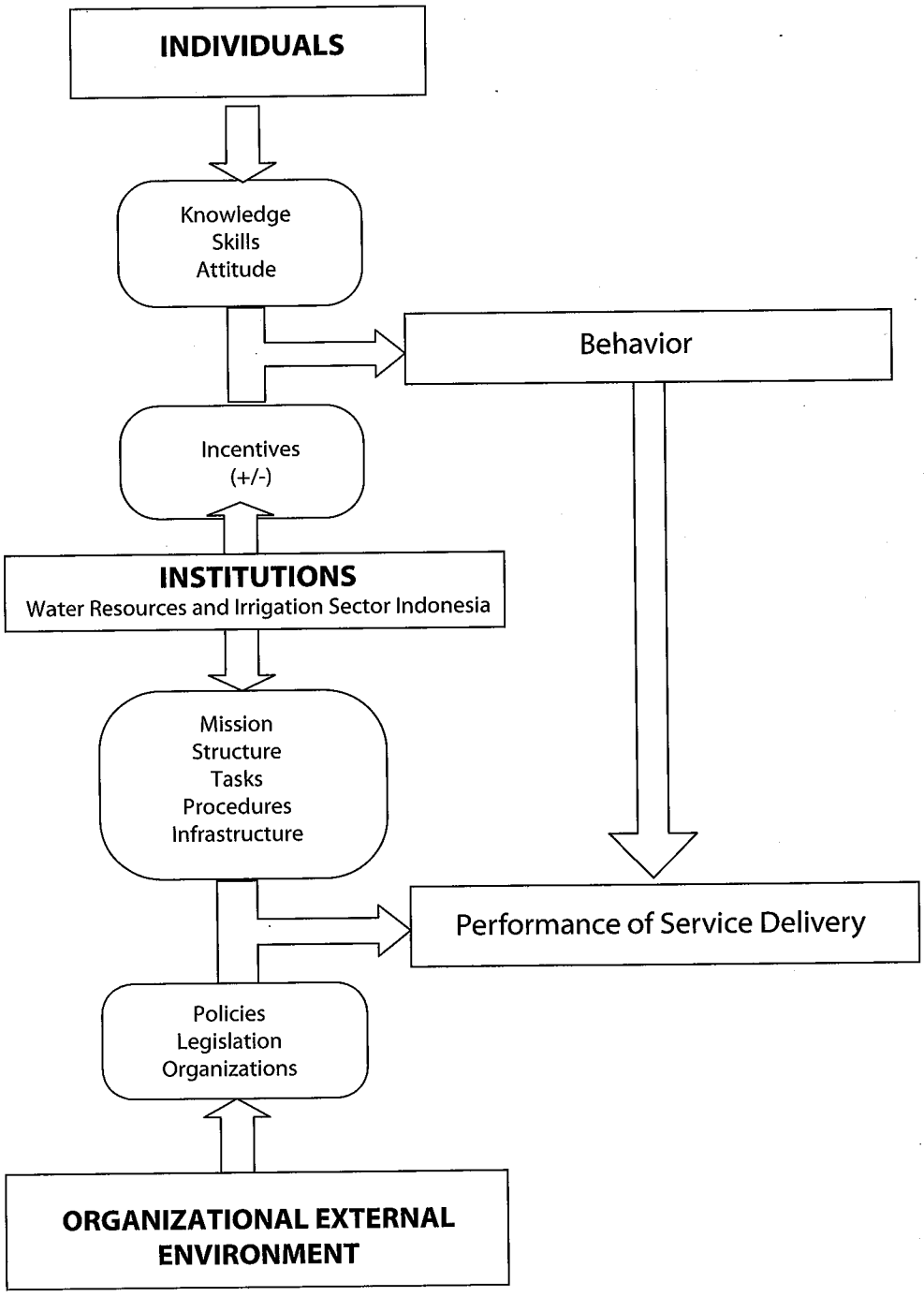
Accountability mechanisms and tools in water resources and irrigation management agencies.

Accountability level	Accountability mechanism	Accountability tool
Operational	Users and service provider agree on the monitoring of delivery of a specified service and consequences for nonfulfillment.	*Service Agreement* which includes explicit: - service specifications (including water use rights) - conditions for service (payment, etc.) - service delivery monitoring (specific indicators) - liability arrangement - settlement of conflict (arbitration or judicial system)
Strategic	Users approve work plan, budget and associated fees and charges through their assembly or representation in governing bodies.	*Work plan* - activities - resources (financial, human, equipment, etc.) - budget - mode of finance - consequences for fees/charges *Asset Management Plan* - Asset register - Asset O&M - Asset performance monitoring - Asset economics - Asset rehabilitation, replacement, modernization, rationalization - Management review - Investment profile *Analytic Accounting System* - cost allocation per service type, element of infrastructure/asset - cost planning per service type, element of infrastructure/asset *Quality Assurance System related to* - activity development - implementation of activities planned - audit (internal /external) - corrective and preventive action - management review
Constitutional	Users exercise their voice to influence the process of strategic decision making.	*Governance system* - user membership in assembly - adoption of statutes and bylaws - election of board and executive management - election of representatives in federations and committees

Note: This matrix was prepared in October 2001 by Paul van Hofwegen (IHE) for preparation of a forthcoming WB-supported "Indonesia Water Resources and Irrigation Sector Management Program."

ANNEX VB

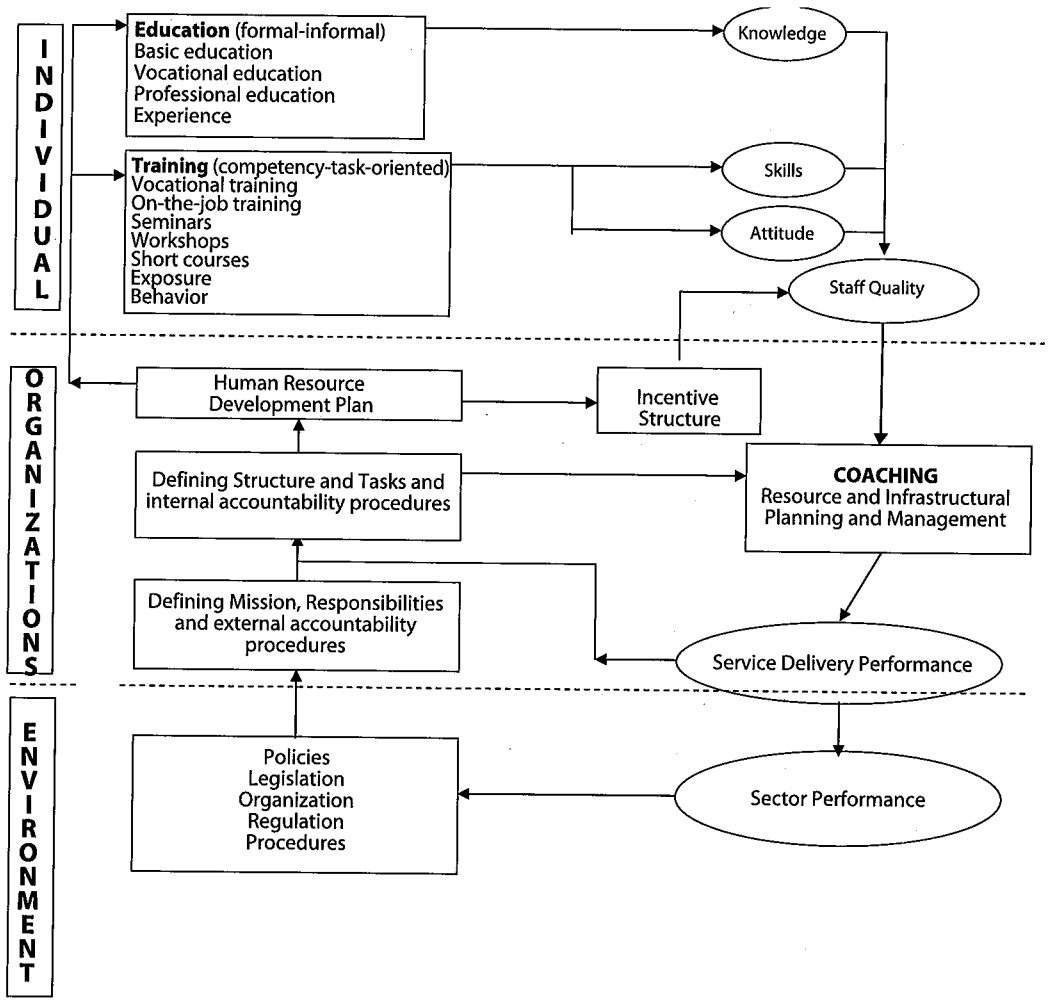
Framework for government agency capacity building.



Note: This diagram was prepared in October 2001 by Paul van Hofwegen (IHE) for preparation of a forthcoming WB-supported "Indonesia Water Resources and Irrigation Sector Management Program."

ANNEX VC

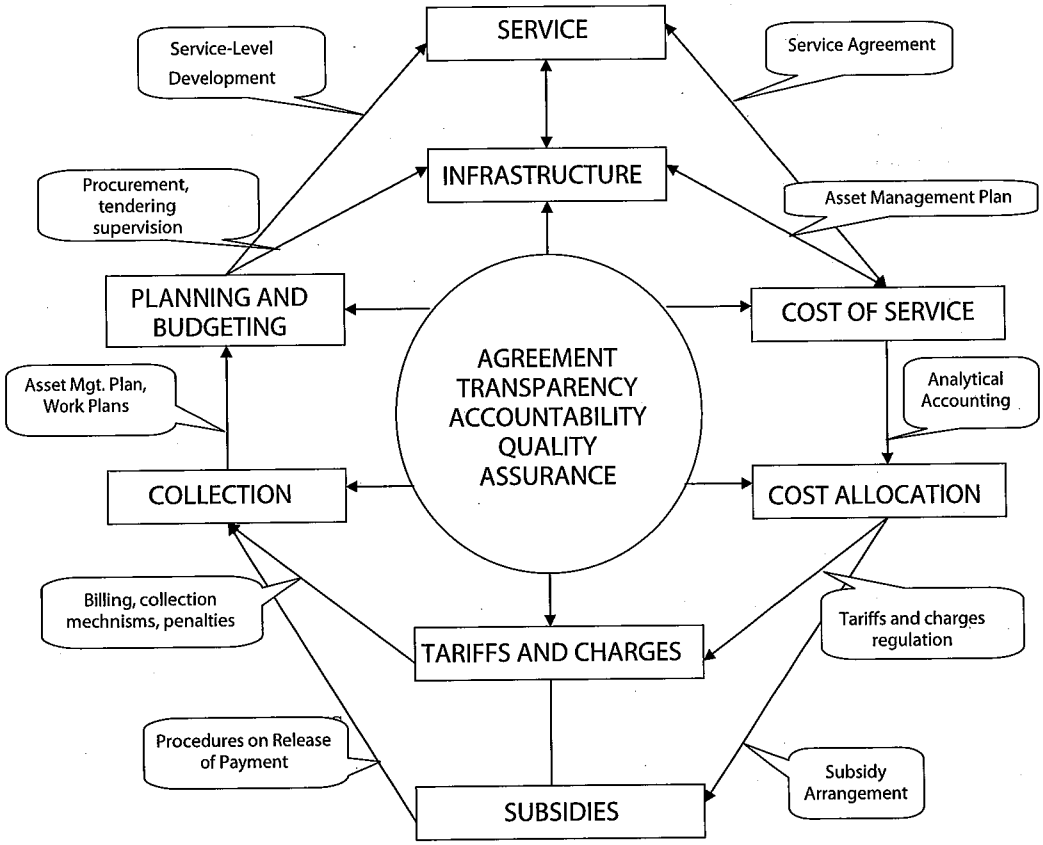
Government agency capacity building activities.



Note: This diagram was prepared in October 2001 by Paul van Hofwegen (IHE) for preparation of a forthcoming WB-supported "Indonesia Water Resources and Irrigation Sector Management Program."

ANNEX VD

Generic management functions and accountability tools in a government/public water service agency.



Note: This diagram was prepared in October 2001 by Paul van Hofwegen (IHE) for preparation of a forthcoming WB-supported "Indonesia Water Resources and Irrigation Sector Management Program."

ANNEX VI

List of water resources development regulations and decrees issued under Law 11/74 prior to April 1999.

No	Forms of regulation	Regarding
I	**Laws**	
1	Law Number 11 of 1974	Water Resources Development
II	**Governmental Regulation (GR)**	
1	G.R. Number 6 of 1981	Contribution for the cost of O&M of water resources development infrastructure.
2	G.R. Number 22 of 1982	Water Management Regulation.
3	G.R. Number 23 of 1982	Irrigation.
4	G.R. Number 14 of 1987	Partial handover of government public works responsibilities to the regions.
5	G.R Number 5 of 1990	Jasa Tirta Public Corporation
6	G.R. Number 20 of 1990	Water Pollution Control
7	G.R. Number 42 of 1990	Jatiluhur Authority Public Corporation
8	G.R. Number 27 of 1991	Swamps
9	G.R. Number 35 of 1991	Rivers
III	**Presidential Decision/Presidential Instruction (PD/PI)**	
1	Presidential Decision Number 58 of 1990	Establishment of Jasa Public Corporation as a corporation that may charge and obtain fees for the cost of Water Resources Development Infrastructures.
2	Presidential Instruction Number 1 of 1969	Implementation of Water Resources Development Management
3	Presidential Instruction Number 2 of 1984	Farmer Water User's Associations
IV	**Minister of Public Works Regulation (MPWR)**	
1	MPWR Number 39 of 1989	Division of River Basins
2	MPWR Number 42 of 1989	Procedure of handover of small irrigation networks including competence to manage Farmer Water User's Associations.
3	MPWR Number 45 of 1990	Water quality control of water resources
4	MPWR Number 48 of 1990	Water and Water Resources Management at the River Basin
5	MPWR Number 49 of 1990	Procedures and requirement for the water and water resources use license
6	MPWR Number 52 of 1990	General policy on management for the Jatiluhur Authority Public Corporation
7	MPWR Number 57 of 1987	Implementation of the handover part of the government's responsibilities
8	MPWR Number 58 of 1987	The devolution of public works technical development and technical supervision to the Provincial Public Works Service
9	MPWR Number 63 of 1993	River Border Line, River Utilized Area and River Control Area
10	MPWR Number 64 of 1993	Swamp Reclamation

11	MPWR Number 65 of 1993	Water resources development campaign.
12	MPWR Number 67 of 1993	Provincial Water Management Regulation Committee
13	MPWR Number 70 of 1997	Establishment of river border line in the working area of Jasa Tirta Public Corporation at the Surabaya River, Wonokromo river, Kedurus river, and Porong river
14	MPWR Number 76 of 1997	Dam Safety
V	**Joint Ministerial Decision**	
1	Joint Ministerial Decision of the Minister of Home Affairs Number 9 of 1984, the Minister of Forestry Number 05 of 1984 and Minister of Public Works Number 124 of 1984	The handling of land conservation in the frame of security for priority catchment areas
2	Joint Instruction of Minister of Mines Number 0076k/101/ of 1991, the Minister of Public Works Number 04 of 1991	The use of water and water resources for the mining effort activities, including oil and gas mining and utilization of geothermal resources.
3	Joint Instruction of Minister of Home Affairs Number 04 of 1973 Number 13/Instr/UM/39/1973 and Minister of Public Works Number 13/M/1973	Implementation of the water resources development management (water regulation and irrigation networks maintenance)
VI	**Minister of Public Works Decision (MPWD)**	
1	MPWD Number 55 of 1993	License to use Asahan river water
2	MPWD Number 198 of 1983	Basic tariff for the water resources development infrastructures cost fee at the Jatiluhur Authority Public Corporation.
3	MPWD Number 458 of 1986	Provision for river security in connection with the class C mineral material exploitation.
4	MPWD Number 459 of 1986	Provision for river security in connection with the class C mineral material exploitation in East Java Province.
5	MPWD Number 631 of 1986	Establishment of Brantas river water resources and green belt of Sutami dam.
6	MPWD Number 196 of 1987	Regulatory for daily implementation working procedure of water management regulation coordination
7	MPWD Number 275 of 1987	General guidance for the division of task, competence and development of groundwater in the Ministry of Public Works
8	MPWD Number 98 of 1993	Dam Safety Organization
9	MPWD Number 392 of 1998	Formation of flood disaster abatement task force in the Ministry of Public Works
VII	**Director General of Water Resources Development Decision (DGWRDD)**	
1	DGWRDD Number 185 of 1986	Irrigation Planning Standards
2	DGWRDD Number 229 of 1986	Guidance of Operation
3	DGWRDD Number 176 of 1986	Implementation Guidance for Provision on river security in connection with class C mineral material in the rivers
4	DGWRDD Number 10 of 1988	Formation of Executive Secretariat for water management regulation coordination
5	DGWRDD Number 125 of 1988	Formation of Coordination Team for Citarum river water management regulation

Water-resources management mandates of government ministries.

Water sector activities and responsibilities	MPW			MoA			MoF			MoME			MoI			MoE			MoH			BPN			MoHA		
	Pr	Us	Ot	Pr	Us	Ot	Pr	Us	Ot	Pr	Us	Ot	Pr	Us	Ot	Pr	Us	Ot	Pr	Us	Ot	Pr	Us	Ot	Pr	Us	O
Overall water resources and quality management and admin. of surface water policy coordination	■	■																									
Overall management and guidance of irrigation	■				■	■																					
Management of upper watershed areas							■		■																		
Water use management, power generation and groundwater management											■	■															
Pollution control of industrial effluent (off-stream)																			■								
Water use management for industry and industrial waste-water pollution abatement															■	■											
Water quality standard management for various water uses																					■						
Land provision and admin. in water resources areas																						■		■			
Control and coordination of coadministration and autonomous tasks in water resources management																									■		■

Notes: Provider (Pr) = Water resources provider for concerned use; User (Us) = Water resources for related purposes; Other (Ot) = Administration/management/supervision; MPW = Ministry of Public Works; MoA = Ministry of Agriculture
Mof = Ministry of Forestry and Estates; MoME = Ministry of Mines and Energy; MoH = Ministry of Health; BPN = National Land Agency; MoHA = Ministry of Home Affairs
MoT = Ministry of Transport uses rivers for navigation; Bappenas = National Planning Board is responsible for budget planning and programming for water resources development and management.

ANNEX VIIIA

Conformity of WATSAL Agenda with the World Bank's water policy assessment criteria.

1. Mapping of the WATSAL Policy Matrix into the Water Sector Institution Model Framework

1.1 National Water Resources Policy

Nature of Investment Selection Criteria

- Improved PPB system for prioritized and sustainable investment and fiscal management based on new administrative and fiscal decentralization laws.

Pricing and Cost Recovery

- Implement beneficiary contribution to irrigation O&M costs and "polluter pays" principle for government costs of public and private pollution mitigation and control.

Water Allocation Criteria and Transfer Mechanisms

- Establish water use rights for groundwater and surface water allocation.
- Facilitate a unified allocation licensing system for conjunctive use of surface water and groundwater.

Integrated Planning and Management

- Institutionalize prioritized and integrated spatial and river-basin planning based on transparent stakeholder representation and participation in planning processes.
- Create regional water resource regulatory structures based on "one basin, one management" using local-government basin-management agencies or self-financing basin corporations under regional government control.
- Improve water utilization efficiency.

User and Stakeholder Participation

- Stakeholder input into an interministerial National Water Council.
- Stakeholder/user participation in provincial and basin water-resources coordination/ regulation committees.
- Strengthen enabling mechanisms for empowering community management and financing of irrigation.

Private-Sector Participation/Government Decentralization

- Improve private participation incentives and regulatory framework for investment, and O&M concessions in water supply, irrigation and water pollution control.
- Ensure reform of sector laws, policies and administration is consistent with regional and local autonomy laws.

Water Quality Rights and Standards

- Seek regional surface water and groundwater quality levels conducive to sustainable development and compatible with spatial and basin plans.

Linkages with Other Sectors and Policies

- Improve water-resources coordination between forestry, agricultural conservation activities for sustainable watershed, floodplain and estuarine management.
- Establish integrated policies for environmentally and socially sustainable wetland conservation and swampland development.

1.2 Water Law Reforms and Improvements

Linkages to National Water Policy and Other Sectors

- NWRP adopted as "Broad State Policy Guidelines" binding on all agencies.
- Amend Basic Water Law of 1974.
- New national regulatory framework for water quality and pollution control.
- Legal framework for participatory irrigation management based on "Declaration of Irrigation Management Reform."

Water Rights Format

- National framework for water rights.

Conflict Resolution Mechanism

- National Water Council for sector coordination.

Accountability and Participation Provisions

- Regulations for private sector and stakeholder participation in all management functions.
- Clarify sector role of water resources agency.

Intergovernmental Responsibilities/Coordination

- Clarify sector functional responsibilities.
- Clarify national, provincial and local policy, operational and regulatory roles.
- Allow environmental regulatory agencies to give operational management concessions to RBCs for water-pollution control.

1.3 Water Administration Reforms

Relative Influence of Government Layers

- Implement subnational regulatory arrangements for water allocation, wastewater discharge, drought management, conjunctive use, water quality monitoring and integrated watershed management in key smaller less-developed river basins through Basin Management Committees and Basin Provincial Management Units in 8 of the 27 provinces.
- Establish four self-governing River-Basin Corporations in four developed basins and the reform corporate structure of two existing RBCs.
- Implement integrated water-pollution control and water-quality management in six developed river basins.

Administrative and Governance Features

- Implement stakeholder involvement in provincial and basin management and coordination committees.
- Strengthen framework for self-governing irrigation WUAs (and WUAFs) with governance and financial authority to manage irrigation networks transferred to them.
- Redefine roles and responsibilities of irrigation institutions and agencies at all levels for reliable water delivery and post-management transfer of WUA services.
- Joint management of irrigation schemes by farmer associations and the government.

Pricing and Finance

- Implement effluent discharge fees.
- Improve the incentive framework for industry, mines and municipalities to comply with discharge standards and licenses.
- New framework for irrigation O&M based on mandatory payment of WUA service fees and government matching subsidies.
- Irrigation Improvement Fund for direct funding of phased rehabilitation of irrigation networks under WUA control.

Management Information and Decision-Support Systems

- Establish a sector decision support data system based on information-sharing between agencies for all administrative levels.
- Establish a national hydrological data management and data reliability system.
- Establish a national water-quality monitoring network.

ANNEX VIIIB

Application of WB assessment criteria for sector policy reform Interventions to WATSAL.

1. Comprehensive Management

A. National/Regional Level

- Based on sound assessment of water resources and alternative development scenarios? Not applicable to a reform framework, only detailed strategies and management programs.
- Environmental/ecological issues an integral part of the framework? Yes, clearly enunciated in the National Water Policy and draft Water Resources Law.
- Stakeholders fairly represented in framework formulation? Fair stakeholder representation is a fundamental principle in the new framework's drafts; whether this is passed by the bureaucracy and fairly applied remain to be seen.
- The framework addresses policy issues, such as water rights, water pricing, cost-recovery, private-sector participation, capacity building, etc.? Yes.
- Is there a clear relationship to national/regional goals and policies? The framework is based on this.

B. Regional/Basin Level

- Based on sound assessment of water resources and alternative development scenarios? Hydrology and water-quality data reliability properly addressed.
- Environmental/ecological issues an integral part of the framework? Yes.
- Stakeholders fairly represented in framework formulation? Currently yes, but this remains to be seen in practice.
- The framework addresses policy issues, such as water rights, water pricing, cost-recovery, private-sector participation, capacity building, etc.? Yes.
- Is there a clear relationship to the national/state framework? Yes.

C. Projects – (not relevant)

2. Institutional Development

A. Legal and Policy

Water Resource Policy and Legal Interventions

- Are there coordination mechanisms across agencies and jurisdictions? Yes.

- Do major stakeholders (water users, civil society, NGOs, etc.) participate in policymaking, agency and sector performance oversight? Yes.

- Do the policy institutions have sufficient power to be effective, i.e., budget authority, legal mandates, political backing, etc.? At the legal and policy level, yes, but practice may be different.

- Are the policy institutions supported by competent water management agencies? All institutions are supported by agencies but their competence requires capacity building.

Water-Service Policy and Legal Interventions

- Effective regulatory framework: pricing, service, environmental standards, etc.? Such standards were only developed for the water-pollution control framework; their development for water resources and irrigation is the task of a post-WATSAL capacity-building program.

- Water service organizations operate on a commercial basis? All river basin corporations are expected to operate on a semicommercial basis as a "Perum."

- Explicit policy statements regarding: service pricing, subsidy levels, etc.? Not detailed and forceful enough albeit that the national Water Policy and preamble to some PPs state that water needs to be regarded as an economic as well as a social good.

- Water service organizations appropriately decentralized? Yes.

B. Management and Regulation

Water Resource and Environmental Management Agencies

- Agency's monitoring and planning capability strengthened? Yes, provision is made.

- Collaboration with other agencies involved in water management, i.e., environmental, fisheries, agriculture? All are members of the WATSAL Task Force.

- Does the agency have an outreach/public-education program? Yes through public consultation.

- Plans and decisions reviewed and approved by an appropriate policy institution? Yes.

- If the agency provides infrastructure (i.e., bulk water supply or flood control), is this unit a distinct financial and operational entity, and separated from planning and regulatory responsibilities? Yes.

Water-Service Regulation Bodies. None established under WATSAL.

C. Water-Service Organizations

- Is the organization financially and operationally autonomous, and operating on a commercial basis? Yes.

- Is the organization under an appropriate regulatory framework for pricing and service quality? Yes.
- Is the water-service organization appropriately decentralized? Yes.
- Do water service customers and users have a voice in management decisions? Yes

3. Economic and Social Issues

A. Financing and Subsidies

- Are subsidies explicit and justified? Irrelevant.
- Are cost-sharing arrangements between government agencies and between public and private interests based on a negotiated agreement? Yes.
- Are private-sector provider financing terms explicit? Irrelevant.
- Does the water-service organization/agency contribute some degree of self-financing? Yes.
- Are nonpublic sources of financing used (private banks, bonds, equity markets, etc.)? Only in principle.

B. Water Service Charges—Irrelevant.

C. Disadvantaged Groups—In principle, these need to be considered as a matter of policy.