

Epilogue:¹

Spillover Effects of Institutional Evolution on Japan's and Indonesia's Integrated Water Resources Management (IWRM) to the Movement of South-South Cooperation of IWRM

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Since the International Conference on Water and the Environment in Dublin in 1992, Integrated Water Resources Management (IWRM) has emerged as a driving concept to develop and manage river water resources in developing countries. This paradigm was further elaborated in such a way that river basins are the logical units for water resources management and, therefore, IWRM is implemented by the river basin development and management organization, the River Basin Organization (RBO) in short. In line with this context, the Asian Development Bank (ADB), the leading multilateral development bank for Asian countries, approved a "Water Policy" in 2001 to "promote water as a social vital economic good that needs increasingly careful management to sustain equitable economic growth and reduce poverty" and "to advocate a participatory approach in meeting the challenges of water conservation and protection in the region." ADB subsequently started to pursue vigorously IWRM through its technical and financial assistance.

The concept of IWRM, though it was not defined as such before the early 1990s, was conventionally well-recognized by the parties concerned. In other words, knowledge, and experiences of IWRM had been accumulated on a project-by-project basis throughout the world. The following two IMRM projects in Japan and Indonesia, for example, suggest that IWRM had been pursued for many years before the 1990s. Based on this standpoint, Japan Water Agency (JWA; Japan's RBO), ADB and the Asian Development Bank Institute (ADBI) jointly decided to disseminate solutions on IWRM issues based on practical knowledge and experiences in Asian countries through the establishment of Network of Asian River Basin Organizations (NARBO) in the early 2000s.

Japan's IWRM Experience ~Aichi Canal (Kiso River System Development) Plan~

Development Challenge

The Aichi Canal Plan (Aichi Plan) was originated from a proposal by a leader of farmers, and a few local experts and politicians in Aichi Prefecture, Japan, where water shortages had tormented subsistence farmers for decades; farmers soon began promoting the concept of the Aichi Plan on a participatory bottom-up approach employed by the local leaders. Amid the national strategy to increase food production and to respond to the strong and deep-rooted demand from farmers to secure water for agriculture, the central government of Japan quickly responded to this local initiative and supported

¹ This paper was originally written when the author completed a research work on and published a book entitled *Aid Effectiveness to Infrastructure: A Comparative Study of East Asia and Sub-Saharan Africa -Indonesia Case Study*, JBIC, July 2008. However, this article was not included as epilogue in the book and left at author's hand.

the implementation of the Aichi Plan. The local leaders with support of the central government approached the International Bank for Reconstruction and Development (World Bank) and succeeded in obtaining financial as well as technical assistance. The Aichi Plan was implemented between 1957 and 1961 as Japan's first multi-purpose development plan which provided water for irrigation, domestic and industrial purposes, as well as hydropower generation.

Water Use

During the early stage of the Aichi Plan, water use was largely directed to irrigation for 33,000ha of paddy and upland farm fields. However, as urbanization and industrialization took place rapidly, the agricultural area decreased accordingly as well as did demand for irrigation water. On the contrary, demand for domestic and industrial water increased in near inverse proportion.

Plan Execution and Stakeholders

The local leaders, owing to the World Bank recommendation, set up an implementing agency, the Aichi Canal Public Corporation (ACPC) in 1955 which was solely responsible for Kiso River basin development. The concept of the Aichi Plan was formulated by ACPC with support of the Japanese Ministry of Agriculture. Although ACPC did not publish a comprehensive plan document of Kiso River System Development, the Aichi Plan encompassed basic water-resources infra projects. And the Aichi Plan itself was one of the 31 World Bank-financed projects implemented between 1954 and 1966 in Japan which took place during the post-war economic recovery period. The World Bank assisted the execution of the Aichi Plan particularly at the stages of planning and implementation, though its financial contribution was quite small, only 4 % of the total project investment cost as shown below. As a point of interest, the Aichi Plan was executed quite similar to that of Tennessee Valley Development Program (TVDP) carried out by the Tennessee Valley Authority (TVA). In fact, the Aichi Plan was modeled partly on TVDP at the planning stage.

With the introduction of advanced technologies then available, particularly construction machinery and dam technologies, the Aichi Plan successfully constructed large-scale river-water-resources infra facilities within the Aichi Plan period namely the Makio Multi-purpose Dam, its main channels (112km), branch channels (1,012km); Togo Dam Regulating Reservoir and its agricultural water pumping stations (18 locations).

The stakeholders involved were the local inhabitants including their leaders, ACPC, Japanese Ministries (Ministry of Agriculture for irrigation, Ministry of Welfare for domestic water, and Ministry of Trade and Industry for industrial water and hydropower) and the World Bank as well as Japanese contractors and two American consultant companies (Erik Floor & Associates and Pacific Consultants Incorporated).

Management of Plan Execution

ACPC played the central role in planning, implementing and managing the Aichi Plan as the Kiso River System RBO during the period from 1956 to 1968, and in 1968 it was merged into the Water Resources Development Public Corporation of Japan (WARDEC); the nation-wide RBO was established in 1962. WARDEC, since its establishment (renamed Japan Water Agency -JWA- in 2003), has been engaged in IWRM of 7 river systems (Tone River System and Yodo River System since 1962, Chikugo River System since 1966, Yoshino River System since 1967, Kiso River System since 1968, Ara River System since 1976, and Toyo River System since 1990) based on their respective water resources development basic plans formulated by WARDEC.

Total Investment

To construct the infra facilities of the Aichi Plan, their total cost amounted to ¥42.3 billion of which ¥1.7 billion (\$4.9 million), or 4% of the total project cost, was used out of the initial World Bank loan ceiling of ¥2.5 billion (\$7 million at the then rate of ¥365/US\$1). ACPC endeavored to spend the loan economically, effectively, and efficiently.

Thus, the Aichi Plan, namely, Japan's first IWRM plan was fostered by the leaders of local farmers and was successfully executed over 6 years from 1956 through 1961 by ACPC, the RBO of the region. Far before the contemporary concept of IWRM emerged after the Dublin conference in 1992, Japan literally started to pursue extensively IWRM by establishing the first ACPC in 1955 and subsequently followed it up by establishing WARDEC in 1962.

Indonesia's IWRM Experience ~The Brantas River Basin Development Plan~

Development Challenge

Amid the promotion of a national strategy to feed the nation, the Brantas River Basin Development Plan (Brantas Plan) was designated in the late 1950s as one of the top priority development plans of Indonesia. The Brantas Plan was originated by a request of the Indonesian government to a Japanese consultant company, Nippon Koei Co. Ltd. (NK) to formulate the Brantas river-water-resources development plan. NK formulated the plan in 1961 as the first multi-purpose development plan (the first comprehensive master plan) in which specific water-resources infra projects were prioritized, namely, to secure water for irrigation and flood control as well as for hydropower generation, and for domestic and industrial purposes. The prioritized projects were then implemented accordingly by the initiatives of the Indonesian government. The first master plan was revised three times in 1973, 1985/86 and 1998 on a 10-year review basis. The Brantas Plan lasted over 40 years.

Water Use

During the first two decade or more of the Brantas Plan, water was used mostly for the irrigation of approximately 300,000ha of paddy fields. As urbanization and industrialization started to progress in the 1980s in the basin, water use diversified, besides irrigation and flood control, into domestic water, industrial water, river-water quality maintenance and brackish water fisheries.

Plan Execution and Stakeholders

The Brantas Plan was executed by the Brantas River Basin Development Executing Office (Brantas Office) which was established in 1965. Four comprehensive master plans (M/Ps), in which prioritized water-resources infra projects were listed, were formulated on a 10-year review basis in 1961, 1973, 1985/86 and 1998 with Japan International Cooperation Agency (JICA-Japan's official technical assistance agency) T/A grants by a single Japanese consultant company NK, under the "One River, One Plan and One Management" principle.

During the Brantas Plan period of over 40 years, 31 infra projects were implemented in line with the recommendations of the M/Ps. Twenty-one of 31 projects were implemented successfully with Overseas Economic Cooperation Fund loans of Japan (OECF-Japan's official financial assistance agency). The 31 projects consist of 9 multi-purpose dam projects, 6 barrage projects, 8 irrigation projects, 6 river improvement projects and 2 volcanic debris control projects. By the end of the 1980s, the Brantas Plan produced more than 7,000 qualified engineers and technicians who had become well-equipped with modern and advanced technologies through the Force Account System (a system where the project is constructed and managed by the Brantas Office's own employees rather than outside labor).

As the Brantas Plan was implemented mostly with Japan's ODA, the major stakeholders at the forefront were JICA and OECF on the donor side, and the Brantas Office and NK as a part of the Brantas Office on the recipient side.

Management of Plan Execution

The Brantas Office played the thorough role of RBO from 1985 to 1990, though it was the Plan Implementation Unit (PIU), as it was given free hand authority of managing the Brantas Plan. In 1990, the Brantas Office created an offshoot organization with 500 staff transferred from the Brantas Office to Perum Jasa Tirta (PJT) to become a nation-wide water resources management public corporation. At this point of time, the role of IWRM except new project development was transferred from the Brantas Office to PJT.

Total Investment

The total investment as of 2002 in the Brantas Plan for over 40 years reached ¥224.7 billion including the local currency funding portion of the Indonesian government. Of this, the total foreign currency component shared was ¥103.6 billion, Japan's total ODA by JICA and OECF accounted for almost 75% or ¥170 billion which exceeded the total foreign currency component, which in turn implies that OECF generously financed a considerable portion of the local currency component specifically to assist at times of budgetary constraints of the Indonesian government by such events as the coup d'état in 1965 and the oil crises in 1973 and 1979.

Thus, as in the case of the Aichi Plan of Japan, the Brantas Plan of Indonesia was also successfully executed from 1961 to 2002 by the Brantas Office and/or PJT. Again, long before the concept of IWRM and RBO emerged in the early 1990s, the case of the Brantas Plan had accumulated for 40 years intensive and extensive experiences on IWRM and RBO.

NARBO as a South-South Cooperation Organization

The two cases above suggest clearly major water challenges of Asian rivers. Although the Aichi Plan handled only four goals; irrigation, domestic water, industrial water and hydropower generation, the Brantas Plan tackled 7 goals; namely, irrigation, flood, hydropower generation, domestic water, industrial water, water quality maintenance and backwater fisheries, which must encompass almost all the goals others may be challenged with in river water management in Asia. Although these cases were older than the contemporary movement of IWRM in the 1990s, they have clearly accumulated practical knowledge and experiences useful to, if not directly applicable to, IWRM of other river basins in Asia.

On the other hand, renowned water specialists and international organizations started to respond to an increasing and acute concern about world water issues and founded the World Water Council (WWC) in 1996. The mission of WWC is "to promote awareness, build political commitment and trigger action on critical water issues at all levels, including at the highest decision-making level, to facilitate efficient conservation, protection, development, planning, management and use of water in all its dimensions on an environmentally suitable basis for the benefit of all life on earth." In the process, WWC created its flagship product, the World Water Forum (WWF) which makes it a rule that a world conference be held every three years.

In March 2003, the 3rd WWF was held in Kyoto and IWRM issues were intensively and extensively discussed. WARDEC, having had such knowledge and experiences of IWRM over 7 river systems including the Aichi Canal Plan for 40 years, hosted one of the IWRM sessions entitled "A Review of

Comprehensive Water Resources Management in Japan ~Shared Lessons for Monsoon Asia~.” At this session, WARDEC, ADB and ADBI jointly proposed and decided to collaborate in launching a “Network of Asian River Basin Organization (NARBO)” to exchange even more practical knowledge and experiences on IWRM among the Asian nations.

On Feb. 23, 2004, by the invitation of PJT (RBO of the Brantas Plan), the first general meeting of NARBO was held and its Charter was signed by 43 organizations from 11 countries at the heart of the Brantas Plan, at Batu, East Java, Indonesia. As of March 18, 2011, the number of members became 57 from 19 countries. The three initiator organizations (JWA, ADB and ADBI) are playing the role of NARBO secretariat.

Thus, NARBO was established as the organization “to achieve IWRM in the river basins throughout Asia.” More specifically, NARBO aims “to strengthen the capacity and effectiveness of RBOs in promoting IWRM and improving water governance, through training and the exchange of information and experience among RBOs and their associated water sector agencies and knowledge partner organizations in Asia and to advise on the establishment of RBOs in Asia.” (NARBO Charter)

The two RBOs above, WARDEC/JWA of Japan and the Brantas Office/PJT of Indonesia, are, in fact, capable of answering those issues spelled out in the NARBO Charter, although applicability of their knowledge and experiences may have to be reinvented locally.

This epilogue may not squarely fit in the analytical framework of institutional evolution set forth in Part I of this book. However, the real and practical knowledge and experiences on IWRM accumulated and institutionalized in RBO in totality can be regarded as a kind of institutional evolution to be transferable to and of considerable use in not only Asia but also other developing regions of the world. Then, it can be said that this institutional evolution not only contributed to establishing NARBO but also promoting the south-south cooperation of IWRM as its spillover effect.

Notes:

Throughout the section of “Japan’s IWRM Experience ~Aichi Canal (Kiso River System Development) Plan~”, we refer to the Aichi Canal Plan (Phase I) which was implemented between 1965 and 1961, and not the Aichi Canal Plan (Phase II) which was implemented between 1982 and 2007 designed to cope with the new socio-economic conditions of the time.

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