

REPORT ON RED RIVER BASIN ORGANIZATION WORKSHOP

Dr. Tô Trung Nghĩa

Institute of Water resources planning

1. Background

- The Red River system is the second largest river of Vietnam. Red River is an international river which originates in China and run through Lao, Vietnam before merges the east sea. The total area of the entire basin is 169.020 km². the area in china territory is 81,240 km² (48%), in Lao 1,100km² (0.65%), in Vietnam 86,660km² (51.35%).
 - Administratively, the Red River basin covers 26 provinces with a population of 28 million people (up to 2002).
 - Land resource: the total natural area is 86,660km². Agricultural land is 1,874,100ha in which the cultivation land is 1,463,000 ha (land for rice and subsidiary crops is 1.031.000 ha). Forestry land is 2,570,775 ha in which land with forest is 2,101,000 ha. The land potential for the development of agriculture and forestry is 3,919.500ha.
 - Water resource
- + Surface water: the total annually average water of Red River is 133.68 billion m³ in which the volume outside Vietnam is 51.82 billion m³ (making up for 38.8% billion m³, an equivalent of 577.4 m³/s).

II. Activities of Red River basin organization in 2001- 2003

In order to improve the management, planning, exploitation and protection of water resource of Red River basin and to build a water resource development strategy during period of 2010-2020 for the economic development of the sector in particular and for the society in general, the RRBO has closely coordinated with provinces, sectors and provincial department of agricultural and rural development in the implementation of its mandates. The activities of Red River basin organization in 2003 can be listed as follows:

- Field investigations have been carried out in different localities together with the evaluation of achievements and problems in management and exploitation of water resource in the basin. As a result, the investment approach in water resource development for next coming years has been worked out.
- To synthesize the data base relevant to water resource, such as data on hydrology, meteorology, socio-economic and livelihood situation, status quo of hydraulic works and basic data on water resource study and development.
- To coordinate and support the provinces in the successful organization of workshops within the framework of ADB 3 – 2nd Red River basin sector project.
- To find solutions to the issues concerning the exploitation of floodplains between Nam Dinh and Ninh Binh.
- To involve in the decision making process of the state relating the construction of large scale hydropower works of Son La and Tuyen Quang.
- To involve in the identification of Red River flood corridor and comment on the embankment of Red River in Ha Noi.
- To appraise the relevant project in water resource exploitation in Red River basin, namely water supply for Hanoi from Da river, hydropower projects on tributaries of Red River as

Chu Linh – Coc San and Ngoi Phat hydropower projects. Also Lang – Hoa Lac Residential Zone project, Hanoi Corridor transport project, Bac – Nam highway project.

- To comment on the strategic plan of national aquaculture development and extension.
- To comment on the cancel of the construction of barrage dam on Thai Binh river in Hai Phong.
- In 2003, the RRBO has coordinated with other provinces and members in different sectors in the organization of workshops. Consensus has been built through the comments on the management of the RRBO and issues in exploitation and protection of Red River water resource. The recommendations on the working agenda of the coming years are also made.

III. Brief on the existing management and exploitation of water resource in Red River basin

1. Water supply and drainage works

a. Midland and north mountain area

- Midland and north mountain area cover 4 sub river basins namely upstream Thai Binh, Lo Gam – Chay river, Thao River and Da River in the land of 14 provinces of Lai chau, Son la, Hoa binh, Lao cai, Yen bai, Ha giang, Tuyen quang, Cao bang, Lang son, Thai nguyen, Bac can, Quang ninh, Phu tho and Bac giang. The total natural area is 10,045,853 ha. Agricultural land is 1,305,050 ha. The annual tree land is 979,288 ha, rice and subsidiary land is 433, 363 ha and a population of about 11,349,000 people.
- Hydraulic works: 1.750 medium and small reservoirs have been constructed, also 40,190 weirs, 379 electric pumping stations and many small scale irrigation and drainage structures by farmers. The total design irrigation area is 263,067. The actually irrigated area is 206,037 ha.
- Most of the hydraulic works are small scaled and scattered all over the basin. Many of them are semi permanent and frequently damaged by floods and storms. The investment capital in these works is high whereas the irrigated area is small and scattered and the lengthened and unlined canal system. This results in the inefficient operation of the damaged works.

b – North Delta

- The north delta includes 3 cites of Ha noi, Hai phong, Nam Dinh and 8 provinces of Vinh phuc, Ha tay, Bac ninh, Hung yen, Hai duong, Thai binh, Ha nam and Ninh binh. Natural area 1,478,400 ha. Agricultural land 857,515 ha in which annual tree land is 723,240 ha. The local population is 17,240,000 people.
- Hydraulic works: there are 55 large and medium irrigation and drainage schemes with headworks, pumping stations, intakes and outtakes, specifically:
 - + 500 sluices under dykes for water supply and drainage
 - + 1700 electric pumping stations which irrigate the irrigation and drainage with 7600 machine units in which 3030 serve the irrigation and 5200 for drainage. There area also more than 3,500 in-farm pumping stations.
 - + 35 reservoirs (storage from 0.5 – 230 million m³) and many small reservoirs with total design area of 85,000 ha
 - + The existing irrigation coefficient of all schemes is ranging from 0.7 to 0.9 l/s ha, and drainage coefficient from 3.0 to 4.0 l/s ha, some places 4.5 to 5.5 l/s ha.
 - + At present, the on-farm schemes have been degraded. The irrigation canals are damaged and leaked. Many drainage canals are silted up without ensuring the design function. The MARD is guiding the program of canal lining in order to save water and increase the efficiency of irrigation and drainage works.

2 – Natural disaster mitigation works

- The dyke system has been completed which include the river dyke, sea dyke and sluices under dyke. The total dyke length on main rivers is 2,700 km, sea dyke 310 km. The river dyke system can cope with the flood level of 13.4 m in Hanoi, and 7.21 m in Pha Lai. The sea dyke is designed to prevent saline intrusion in the event of 9 grade storm combined with high tide.
- In order to reduce downstream flood, most of the upstream reservoirs involve in the flood absorption, namely Thac ba, Hoa binh, Nui coc, Cam son... In the future, there will be reservoirs of Son la and Tuyen quang. As a result, the flood and drought will be better controlled.

3 – Technical task

In recent years, the technology and science have been developed distinctively with many studies relating the application of technology in the management and exploitation of water resource in Red River basin. Followings are outstanding achievements:

- The study and calculation of the water balance to protect and effectively use the water resource of individual area and river basin should take into account the changes in climate and crop pattern. This is aimed at a more accurate calculation result.
- The forecast of river channel process, recommendation of river training solutions, identification of Red River flood drainage corridor and working out the operation procedure for Hoa Binh reservoir in order to better control downstream flood and hydropower generation. The flood identification technology in regulation of Hoa Binh reservoir will help a more effective flood forecast.
- The reinforcement of dyke body and foundation is done through drilling and concrete spouting, termite prevention, protection of sea dyke slope against 9 or 10 grade storms in medium tide with assembled concrete slabs with mortise which is a popular method.
- To study, manufacture and apply the new materials in the construction of hydraulic works as the use of geotextile as infiltration material, and anti-penetration materials in consolidation of foundations.
- Study into technologies in design, construction of dam with sediment and detrital soils which are capable in high disintegration and expansion, and technologies in assembling and rehabilitation of hydraulic works, technologies in construction of long siphon beyond rivers with the sunk method, technologies in economic irrigation by sprinkle and drop irrigation in low gravity for crops on midlands and water shortage area.
- Application study of remote sensing technologies using air photographs in water resources investigation, planning and design.
- Design, fabrication of different slanting axial valve, slanting gate and 2 way opening valves and pumps of big capacities and high performance of above 8,000 m³/h.
- Land reclamation technologies by hydraulic measures for saline soils, toxic soils in the Red River Delta in open canals and underground drains.

IV. Existing difficulties and constraints in activities carried out by the Red River Basin Organization

Difficulties:

- At the Office, there are poor physical facilities serving implementation of activities including technical equipment, physical facilities are very well invested in, especially at provincial level.

- Financial resources for activities are very limited which cannot cover operation costs such as field trip costs, update and analysis of data, maintenance of communication among provincial departments and relevant agencies, etc.

Constraints:

- Poor conditions for complete and detailed analysis of existing river basin exploitation and management.
- Update and compilation of data serving river basin management and exploitation are not yet done.
- Operation statutes are not yet finalized that limit the Organization activities.
- Deficit funds to enhance awareness in water resources management and protection.

V. Proposed activities in 2004

1. Implementation of activities by the Office

- Continue update, analysis and building of the database,
- Organize, implement community activities,
- Build website, issue quaternary newsletter,
- Implement activities connecting provinces of the basin and understand possibility to set up sub-basin organization under the RRBO structure
- Prepare reports on river basin management in 2005 and action plan for 2005,
- Carry out cross-sectoral activities for instance inviting other ministries and agencies to participate in field trips, presentation, and discussion to gain better water resources arrangement and management,
- Develop international cooperation in river basin management and exploitation,
- Implement coordination activities with the ADB funded project on Capacity building for RRBO and RRBO Office.

2. RRBO's activities

- Renew meetings, introduce river basin integrated management, give comments on sectoral planning, address preminent issues then submit recommendations to the Ministry for timely and rational solutions,
- Implement periodic meetings with contents proposed and prepared by the RRBO Office,
- Carry out activities relevant to the ADB funded project on Capacity building for RRBO and RRBO Office.

VI. Recommendations

- Supplementary funds to cover activities to be carried out by the RRBO,
- Investments in physical facilities, working office and scientific studies serving river basin management
- MARD support international relations with other countries in Red river basin, to have conferences, exchange views on their common concerns
-