Fact Sheet 4 Water Engineering and Environmental Impacts

by SIMON BENEDIKTER

The environmental impacts of large-scale infrastructure projects constitute another important aspect with regard to water control planning and management. This dimension will be elaborated in the following:

State planning of water resource development and hydraulic engineering in the delta reached its first peak with the NEDECO Master Plan in the 1990s. The plan still constitutes an important frame-work for water resources planning, and many projects currently under construction refer to it. However, certain changes can be observed whereby, previously, hy-draulic engineering focused on single constructions such as canals, dikes and pumping stations, yet during the last 20 years large-scale approaches have been favoured, such as irrigation and drainage schemes that are combined with road infrastructure projects and cover vast areas of agricultural land. Moreover, water resources management and planning have become more diverse recently, due to growing water demands from aquaculture development and industrialisation.

Water control schemes are highly controversial though, as interference often causes severe environmental and socio-economic side-effects.

At the macro-scale, the loss of natural flood lands due to closed embankments in the upper delta has increased water discharge through major canals and rivers. This in turn causes bank erosion and increased sedimentation in downstream areas of the delta during the monsoon season. In the dry season, water abstraction for irrigation in the upper delta leads to increased freshwater scarcity and prolonged salinity in coastal areas.

Largest water control schemes in the Mekong Delta

	Size in ha	Funding (million US$)	Objectives
O Mon – Xa No (Kien Giang, Hau Giang, Can Tho City)	45,000	70	Flood control, increased irrigation and drainage capacity
South Mang Thit (Vinh Long & Tra Vinh)	225,000	68	Salinity control, increased freshwater availability
Quan Lo – Phung Hiep (Soc Trang, Bac Lieu, Ca Mau)	363,000	44	Salinity control, increased freshwater availability
North Vam Nao (An Giang)	36,000	36	Flood control, increased irrigation and drainage capacity

Table: Simon Benedikter

An investigation of the *O Mon – Xa No* dike construction project reveals that negative environmental and socio-economic impacts have most likely outstripped economic benefits. Local authorities and inhabitants of the project regions complain that the scheme, implemented by the Ministry of Agriculture and Rural Development (MARD) and funded by the World Bank, is inappropriate for local ecological conditions. Concerns have been raised about declining water quality, particularly during the dry season, when water inflow is hampered by narrow points at sluices, which means that water thus cannot regularly be flushed out of the dike system and people living within the system have to use polluted surface water (resulting from solid waste, domestic waste water and agro-chemicals) for agriculture production and domestic use. In many cases they also rely on surface

water for drinking water. Water scarcity during the dry season poses another problem for agriculture, while the dike system obstructs beneficial flooding during the rainy season. Furthermore, the lack of fertile sediments decreases soil fertility and forces farmers to increase the use of chemical fertilizers, which in turn contributes to further contamination, since water from fields and ponds is difficult to drain.

O Mon – Xa No sluice gate and canal during the dry season and low tide

Photograph: Simon Benedikter (2009)

Most large-scale schemes are constructed by the central government (MARD), with only minimal participation of and consultation with local authorities and local scientific experts – as criticised by local cadres and the media in the case of *O Mon – Xa No*. From their perspective, the scheme design was copied from the Red River Delta, although this area's natural conditions differ totally from those of the Mekong Delta. Apart from environmental aspects, sluices have been assessed as problematic for waterway transportation in that larger boats can no longer enter canals due to the narrow sluices, while the carriage of agricultural goods by boat actually comes to a complete stop when sluices are closed. This causes enormous economic costs, in particular for farmers, since transportation needs to be shifted to roads, which is more expensive.

Although many of these issues were raised during the planning phase by local authorities, their voices remained unheard by central implementing agencies under MARD.

In a similar way the *North Vam Nao* Project, funded by AusAid, took off in the 1990s under MARD. When environmental problems occurred on the site, local resistance within the province grew, the project was suspended and the whole approach reconsidered. With a reviewed project concept, which aimed at minimising environmental and socio-economic impacts, the province of An Giang took over responsibility from MARD. Therefore, the provincial DARD was charged with project implementation along with other departments, especially the Department of Natural Resources and Environment (DONRE), whose task was to carry out environmental impact assessments and monitor water quality. All in all, a more integrative approach was followed under provincial control, which took local natural and socio-economic conditions far better into account. Obviously, this reduced negative impacts and increased acceptance within the local population.

Further Reading

EVERS, H.-D. & S. BENEDIKTER (2009): Hydraulic Bureaucracy in a Modern Hydraulic Society – Strategic Group Formation in the Mekong Delta. Water Alternatives 2(3): 416-439.

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