

4.1 Basin-wide Perspective

As population expands, competition for water resources will increase and the need to make efficient use of the available resources will become imperative. Appropriate water policy and the application of the "user pays" principle are basic to ensuring frugal water use.

The legal basis for land use and land ownership is provided in the Land Law of 1996 and Land Decree No. 99. In principle, the State owns all land but long-term occupancy and utilization rights for individuals are recognised. A significant cumulative impact resulting from the implementation of the NT2-HPP could be and increased demand for land in the neighbourhood of project-related developments, increased land prices and increased activity by local government and the National Land and Forest Zonation and Allocation Programme in certifying and titling lands in the impact zone, in both irrigated areas and in the catchments.

4.1.1 Five-Year Scenario (Year 2010)

China

In China, the ongoing development strategies listed, and their manifestations, can be expected to persist for at least the next five years:

- Rural population density stabilisation through birth control and urban drift;
- Accelerated construction of mainstream hydropower projects to reduce dependence on imported fossil fuels;
- Reforestation of steep reservoir catchments;
- Expansion of tree plantations, especially industrial tree crops such as rubber;
- Improved maintenance of existing irrigation systems.

Myanmar

- As Myanmar gradually re-integrates into the global community, the following short-term trends are expected in its Mekong River catchment areas:
- Extension and upgrading of the road network, including international border crossings with Thailand, Lao PDR and China;
- Completion of the hydro-electric project in the Upper Mae Kok tributary;
- Upgrading of irrigation systems, for which there is generally limited potential for expansion due to topographic unsuitability.

North Thailand

Short-term trends in North Thailand will be driven mainly by the Northern Economic Corridor Highway (Ban Houay Xay to Ban Bor Taen in Lao PDR, with a proposed bridge linking Houay Xay and Chiang Khong in North Thailand), together with the ongoing strategies of rural land reform and the "One Tambon (sub-district), One Product" decentralised economic production programme:

- Expansion and industrialisation of Chiang Khong district town/river port;
- Some reversal of the rural to urban drift with agricultural intensification and diversification;

- Upgrading of existing irrigation systems and expansion of erosion-protected rainfed agriculture on lands of low slope;
- Intensified industrial tree crops plantations on steeper lands.

Northeast Thailand

- A swing is expected away from the production of irrigated dry season rice towards industrial crops, such as jute, kenaf, sugarcane, oilseeds and specialist crops, e.g. vegetable seeds and exotic fruits;
- Strengthened protection of conservation areas along the mountain ranges and, to a certain extent, some wetlands may be protected;
- The ongoing trend for expansion of industrial tree crops plantations on rolling ex-farmlands exhausted by cassava production and in some cases into rainfed paddy fields, can be forecast;
- The ongoing programme of upgrading existing irrigation schemes by relining canals and installing metering devices will continue.

Cambodia

Given the ongoing support from the international community through multi-lateral and bi-lateral agencies and NGOs, some slowdown in ongoing trends of ecological degradation of fisheries and forests can be expected as road access into the countryside is steadily upgraded.

- Family planning will commence to take hold;
- Exploitive logging in the catchments will probably continue unabated in the short-term;
- Some progress may be made in gradually re-foresting wetland spawning grounds for fish;
- Further irrigation schemes will be installed in the Delta;
- Rainfed agriculture will be intensified with concentration on livestock production;
- Industrial tree crops plantation may extend to some areas currently marginal for agriculture as road access improves.

Vietnam Central Highlands

Overpopulation and environmental "meltdown" will remain as grave problems in Vietnam for some years to come. There is little, if any, scope for irrigation expansion due to topographic constraints and groundwater depletion. Some improvements in irrigation efficiency can be expected, also a move to diversify away from monoculture tree plantations, particularly coffee, for which the export price is depressed because of global over production. An upsurge in wood fibre producing plantations can be expected as the in-country timber processing market is depending more and more on imports.

The Mekong Delta

Of all the tracts in the Mekong Basin, the Mekong Delta is the most vulnerable to wet season floods and dry season low flows brought about by upstream deforestation and agricultural expansion. The consequent loss of life and property in the wet season floods, and brackish water intrusions in the dry season, have a high impact because of the high population density. They are extremely difficult to mitigate by infrastructural works in situ. The environmental situation in the Delta

will be mitigated when large hydropower projects upstream are commissioned, but this will not happen appreciably within the next five years.

4.1.2 *Twenty-Year Scenario (Year 2025; Assuming Best Practices)*

With the expansion of energy, transportation and irrigation infrastructure foreseen over the next 20-Years, it can be expected that there will remain no more "remote and isolated" areas in the Basin, except for those purposively gazetted as such in the shape of nature conservation and watershed protection "core" zones. Under "Best Practice" development and management, the characteristics pertaining to each category of landuse would be as listed below. Hydrologically, all of the landuse practices listed would be returning the runoff situation to, as far as practicable, the "pre-disturbance" condition, i.e. maximum retention of wet season rainfall in the catchment, to re-emerge as dry season stream flow. Water and atmospheric pollution would be minimised and carbon sequestration maximised. Note that population pressure and economic considerations would eliminate shifting cultivation as a landuse option for the long-term future:

- *Nature and Watershed Protection Forests*: fire-protected, regularly patrolled and guarded by wardens recruited from, and interacting with, the local communities.
- *Slow-growing timber production forests*: fire-protected, guarded and operated under sustained-yield management concessions to which local communities are both signatories, and partial beneficiaries. The pre-designed, pre-constructed logging roads and tracks would be regularly maintained. Management practices regularly monitored by such agencies as the Forest Stewardship Council, incorporating the preservation of seed trees, the restriction of harvests to no more than the Mean Annual Increment (MAI) growth rate and the maintenance of a closed canopy. Management of the wildlife and non-timber forest products within the production forest territory would be entrusted to the local communities, they having been provided with the knowledge and capacity to do so.
- *Fast-growing tree plantations*: fire-protected and equipped with well-maintained and erosion-protected roads and access tracks. Soil-erosion control works installed on steep slopes.
- *Pastures and grazing lands*: fenced, fire-protected and fertilised, restricted to slopes less than 12.5%.
- *Sedentary rainfed arable farmlands*: restricted to slopes less than 25%, slopes greater than 12.5% being terraced and slopes between 5% and 12.5% contour-bunded. Bunds regularly maintained and protected by vegetation. Terraced croplands interspersed with strips of deep-rooted trees as a safeguard against landslides. Soil fertility maintained by a combination of organic composts and phosphatic fertilisers.
- *Irrigated farmlands*: equipped with regularly maintained "state-of-art" water delivery and control structures and operated "frugally" by farmers made conversant with the timing and quantity of crop water requirements.
- *Flood-prone paddy fields*: operated as "rice-fish" farms, employing traditional rice varieties requiring low, or no, inputs of chemical fertilisers or pesticides with supplementary income deriving from "water-proof" animals such as buffalo, ducks, fish, frogs, shrimps, snails, etc.

- Flood-free irrigation schemes: concentrating on the production of wet season rice and alternative crops (including forage for livestock), in the dry season. Emphasis on integrated pest management and the use of bio-pesticides.
- If, and when, rural population density reaches a critical threshold of about 1,000 persons/km², there will be no space to raise large livestock for draught and manure. If out-migration is not considered a viable option, then there is no alternative but to continue to rely on mechanisation and "chemical farming" with their associated economic and environmental consequences.