

# 1. PART 1: GEOGRAPHY & LANDUSE MECHANISMS

## 1.1 Introduction

In terms of Basin hydrology, agriculture is both an impacting and impacted sector. Agriculture expands at the expense of forest. In the hills, expansion of agricultural area without investment in soil-erosion control precautions such as contour bunds or cover crops, leads to aggregated flood run-off, erosion and consequent sedimentation. In the wetlands, it leads to deterioration of fish spawning and feeding grounds. Agricultural intensification in response to increasing population density involves water harvesting and/or irrigation, which reduces downstream discharges through re-evaporating some of the captured rainfall or diverted stream water to the atmosphere. Irrigators themselves are impacted by upstream catchment deforestation and/or hydropower scheme operations. For almost a century, population growth and in-migration into the Basin has caused expansion of traditional agricultural practices into the upland and highland catchments on the one hand and into fragile wetland habitats on the other. This agricultural area expansion has been spontaneous and uncontrolled rather than planned and organised. Most of the riparian governments have attempted from time to time to promote organised rural settlement or resettlement; these have been largely unsuccessful as planning and budgeting have concentrated more on installation of community infrastructure than on investment in land development measures to support stable agriculture.

This Annex provides an overview of the past and present landuse situation in the catchments of the Mekong drainage basin. In particular, emphasis is placed on the impacts of agricultural landuse on the regosphere (the topsoil and subsoil clothing the bedrock), which supports the terrestrial food chain, and the hydrosphere (the water circulating through the atmosphere, the regosphere, deep aquifers, streams and other water bodies) this supports navigation, irrigation and the aquatic food chain.

Basin-wide, member governments are coming to recognise that sustainable economic prosperity will depend upon restoring and maintaining a functional balance between humankind, the environment and the ecosystems, together with restoring a measure of parity between the rich and the poor on the one hand, and the urban and the rural on the other. Emerging low-season programmes emphasise such aspects as poverty alleviation, forest and wildlife conservation, upgrading of health and education services, decentralisation, augmentation of rural infrastructure and so forth. The need for investment in soil-erosion control measure, however, does not yet seem to have been fully recognised.

The past two decades of technical and financial support to the member countries has brought about a considerable increase in the prosperity of the urban middle-classes, but this has sometimes been at the expense of the natural resources in the rural areas and the livelihoods of their populations rather than the reverse.

In this era of globalisation, with burgeoning populations competing for finite resources and economic opportunities, the prime aim of infrastructural and technological development should be to equitably enhance human welfare (health, strength, security, longevity) opportunities for both present and future generations, with an emphasis on making rural lifestyles more attractive and rewarding in order to halt the inefficient overcrowding of large cities.

When assessing the impacts (either direct or cumulative) related to infrastructural development on the livelihoods of the various impacting and impacted stakeholders, it is advisable also to assess the sustainability and the social and legal acceptability of the livelihood modalities of said stakeholders and to plan and programme the necessary corrective and restitutive measures. Thus it is not only the *installation* of

community infrastructures such as roads, hydropower schemes and irrigation systems that must be assessed, but also the impacts of their long-term *operation* and ultimately, their decommissioning.

Part 1 below describes the various geographic characteristics of the Mekong Basin and the various livelihood modalities and technologies employed by the rural inhabitants of the various parts of the Basin, together with the environmental (particularly hydrological) impacts thereof. Particular emphasis is given to a description of the various types of irrigated agriculture because of its propensity to support high population densities and thereby relieve the pressure of agriculture on forested lands and fragile habitats.

Part 2 describes Present and Short-term Landuse Trends with reference to various tracts and sub-tracts within the Basin having as commonality of present landuse modalities and/or future landuse management, investments and requirements for sustainable usufruct.

In Part 3, with sustainability and equitability in mind, "Best Practices" for the various processes involved in the planning and operation of water resources projects are described, together with best practices for landuse in their upstream and downstream impact zones. Implementing policy and institutional strengthening requirements are also discussed. Rather than accepting present trends (which may be unsustainable) as inevitable, the Best Practice approach studies the sustainable carrying capacity of the land and its soil for the various optional uses under the various technological modalities, which are or may become available keeping in mind demographic projections and economic and social preferences. This Annex also outlines the reorientation of ongoing landuse data gathering, analysis and processing that will be required in order to plan and actualise the "Best Practice" scenarios described.

Part 4 envisages the probable landuse situation, which could be expected in the various tracts of the Basin on the commissioning of the Nam Theun 2 Hydropower Scheme (around the year 2010). The 20-Year Scenario envisages what could be the situation if the policy, institutional and Best Practises recommended, are implemented Basin-wide.

The References listed in Part 5: Bibliography provide practical details of most of the Best Practices recommended except in the case of detailing the recommendations to the Mekong Basin Geo-referenced Management Information System. Said recommendations are still in preparation by EcoLao in consultation with the agencies involved.