

The Three Dimensional Commons of the Lower Songkhram River Basin Wetlands, Thailand

David J.H. Blake¹

ABSTRACT

Communities of the Lower Songkhram River Basin (LSRB) wetlands of Thailand (Mekong River Basin) exhibit multi-component livelihoods and complex resource use patterns, adapting to a highly seasonal climate and hydrology dependent landscape. Local people exploit the productive and biodiverse wetland resources in a variety of ways, both intensively and extensively. Most of the natural aquatic and terrestrial wetland resources have traditionally been regarded as common pool resources subject to diverse user regimes which until recently have been poorly documented or recognized. This paper argues that the key driver of the productivity of the ecosystem is the annual “flood pulse” phenomenon, which is closely linked to the Mekong River hydrology.

In recent decades, as the natural resource base has progressively been degraded by externally-driven, market-led commercialization and state-led development schemes (especially land reform, irrigation projects and agribusiness promotion), so competition for the wetland resources has intensified. This pressure has been particularly acute on the valuable fisheries and living aquatic resource base, which has long been fundamental to local livelihoods. As resource competition and conflict in the LSRB has increased, precipitated often by plans to implement “mega-projects” and local landuse struggles, there has been a gradual recognition of the need for alternative approaches to be tried. One such approach trialed in recent years, known as *Tai Baan Research*, utilised local knowledge to document the relationships between biodiversity, culture, ecosystems and livelihoods. It was widely seen as complimentary to more scientific approaches by various Nam Songkhram Basin actors and institutions.

This paper considers some key aspects of the recent history of natural resource usage in the LSRB and some of the main actors and institutions involved. It focuses in particular on the socio-economically important fisheries sector and how property rights regimes have adapted to external change. Taking a local case study approach for one illustrative example of the constantly evolving nature of property rights, the paper relates the story of Tung Mon wetlands as a site of power struggle. An interesting facet of this case is the ephemeral nature of the floodplain resource use regime, which can alternate between a fully privatised property regime to an open-access commons, according to seasonal hydrological conditions.

¹ The author is presently unaffiliated. He will be starting a PhD at the School of Development Studies, University of East Anglia in October, 2008.

Keywords: Lower Mekong Basin; wetlands; ecosystems; livelihoods; resource-use regimes, flood pulse; common pool resources; capture fisheries; local ecological knowledge

Introduction

The Lower Songkhram River Basin (LSRB) occupies approximately one third of the entire Nam Songkhram River Basin in upper Northeast Thailand and is a region dominated by seasonal wetlands. They are a non-delineated complex of diverse wetland habitats that occupy low-lying and floodplain land, which is subject to seasonal inundation and a long dry season. During flooding periods, the wetlands are connected to and become part of a wider ecosystem offering a distinct set of services, functions and values. The LSRB wetlands are rich sites of natural resources that are exploited by local people for subsistence and income purposes and in recent decades more commercial external interests, including the state and private capital. As more diverse interests have staked a claim (whether legal or moral) over the natural resources of the LSRB, it has become a site of contestation and conflict between individuals and institutions at multiple scalar levels. One commentator has referred to the Songkhram Basin as a “theatre of development” which implies the presence of actors, a stage or stages and various props as part of the façade (Lohmann, 1998). This paper examines some of these elements from the perspective of an interested spectator and occasional stage hand in the latter day drama. My personal interest in the Songkhram Basin began when I selected it as a case study site for my MSc dissertation on floodplain agriculture in 2001 and continued when I worked as a technical advisor to a Lower Mekong Basin wetlands conservation project between 2004 - 2007.

This short paper describes the key bio-physical characteristics of the LSRB, as well as some socio-economic, cultural and historical characteristics that define the region. Focusing in particular on the area’s unique hydrology, it argues that appreciating the natural flow regime is the key to understanding options for external intervention and developmental constraints. By framing the principle problems affecting the Basin as “drought and floods”, state-led approaches have allowed a dominant development paradigm to become entrenched that finds it hard to move beyond predictable top-down, engineering solutions to water management as the standard response. The paper briefly critiques this developmentalist approach employed in the LSRB for the last four decades, while considering some of the alternative responses put forward. It focuses attention on a case study example of a complex property rights regime at the land-water interface that offers insights into the ephemeral nature and complexity of wetland resource right issues. In doing so, the paper refers to a novel participatory, action-research approach that was applied in LSRB as a means of engaging local communities and diverse actors in wider resource management issues.

Common property rights regimes have been relatively poorly studied in the Nam Songkhram River Basin. One notable exception is the paper by Kuaycharoen (2003), that focuses on the dynamics of freshwater fishery resources management, with particular reference to three fishing gears and public pond management regimes.

Similarly, Baird (2001) examined the diverse forms of and changes in aquatic resource management and resource tenure in the Siphandone wetlands of southern Lao PDR, demonstrating that “tragedy of the commons” type explanations for natural resource degradation trivialize reality. He argued that due to local social and cultural cohesion, when faced with increasing pressures on aquatic resources, local actors had strengthened their resource co-management systems to ensure greater sustainability.

The Lower Songkhram River Basin

The Nam Songkhram River with a length of 495 kms and basin area of 13,128 km², is the second largest catchment in Northeast Thailand (Blake, 2006). It occupies parts of Udon Thani, Sakhon Nakhon, Nong Khai and Nakhon Phanom provinces with most of the basin being characterized by a mosaic of semi-deciduous/mixed forest, paddy fields, cash crop plantations (e.g. sugar cane, cassava, rubber and eucalyptus), grassland and water resources. The poorly defined LSRB covering an area in excess of 4,000 km² in the lower and middle reaches of the Basin is mostly alluvial floodplain land with a complex mix of paddy land, grasslands, field crops, degraded forest and a mix of temporary and permanent wetlands. The latter category includes manmade reservoirs, as well as areas of river, marsh and swamp. One estimate using GIS techniques has stated that 88.7 % of the LSRB can be considered “wetlands” (Hortle and Suntornratana, 2008).

Despite the dominance of the wetlands environment in the region, it is only relatively recently that the LSRB has been widely recognized as a wetland, and even then much confusion exists in Thai officialdom about what constitutes “a wetland” and how it should be best managed. It is partly a matter of language and terminology, where unsatisfactory definitions have been relied on in the past. Conventional wisdom long typified the LSRB as part of a larger dryland (Northeast Thailand) with a recurring flood problem and development approaches have been tailored to solving the twin problems of “drought and flood” (Breukers, 1998; Blake, 2006a; Blake and Pitakthepsombut, 2006b). The annual flood has typically been referred to as a “natural disaster” in state jargon, with a large annual budget set aside to compensate local people for losses, which has become a perverse incentive for local institutions to also adopt the loaded language of floods as “natural disaster” in recent times (Friend et al, 2006).

Socio-economics of LSRB

A key feature of local livelihoods is diverse household strategies and their multi-component nature, where people have been highly adaptive in exploiting changing economic opportunities and conditions, in an already dynamic environment (Friend, 2007). A core strategy of local people is diversifying risk by using a wide range of resources and combining a range of activities to cope with local and external changes. This principally involves some agriculture, capture (fishing, hunting, etc), foraging and labour exchange components locally, as well as a significant level of off-farm migration (domestic and overseas) and cash remittances supporting the local economy.

Traditionally, the extent to which agriculture has featured in livelihoods of the LSRB floodplain communities has been relatively limited, due to the constraints associated with a highly seasonal wetland environment. In the past, villagers living next to the wetlands were able to trade or barter surpluses of processed fish products with more elevated villages that had rice surpluses or other agricultural products in short supply in wetland villages (Nartsupha, 1984; Petchkam, 1997). The rice grown around wetland villages was mostly limited to small plots of dry season rice cultivated next to seasonal streams and ponds in the flooded forest. The *paa boong paa thaam* was a rich store of wild vegetables and herbal medicines in addition to fish and aquatic life, allowing villagers to harvest nearly all their food needs from nature. Rice cultivation really only became a significant component of local livelihoods, following large scale in-migration to the area about thirty years ago and the rise of state irrigation promotion, with a strong bias towards double cropping rice. The only agricultural component that has remained relatively unchanged during the last three decades of change is raising large livestock, especially cattle and buffalo, as a result of the abundance of grazing available around most villages in forests and on grassland. Only the peak flood period inundated most grazing land and if prolonged, caused periods of hardship to villagers and animals alike.

Hydrology and the “flood pulse regime”

To fully appreciate the LSRB's uniqueness in Thailand, one must understand its complex hydrology. Compared to other parts of Northeast Thailand, the Nam Songkhram Basin is subject to relatively heavy and dependable seasonal rains, ranging from 1,600 – 2,300 mm per annum, over 90 % of which falls in the six month wet season from May to October (Blake and Pitakthepsombut, 2006). This pattern leads to a distinct peak in run-off during August and early September, when rivers and streams swell and frequently over-top their banks causing localized flooding. As the swollen tributaries merge and enter the low gradient, meandering river channel (1:30,000) and broad floodplain of the lower reaches, a pronounced backwater effect occurs caused by the influence of the Mekong River mainstream level hindering the drainage of the Songkhram River and contributes to widespread flooding each year. In some years, when the Mekong River level is particularly high and exceeds that of the Nam Songkhram, there may be a reverse flow effect observed with rich, silt laden waters from the Mekong flowing back up the Songkhram River for many kilometres. In the average year, the flooding in the LSRB will cover an area of nearly 1,000 km², but in an exceptional year (i.e. a 1 in 50 year flood), the area inundated could be up to twice as much as this (Khon Kaen University, 1997; Blake and Pitakthepsombut, 2006). The flat topography of the LSRB means that the inundation area is highly sensitive to relatively small changes in water level.

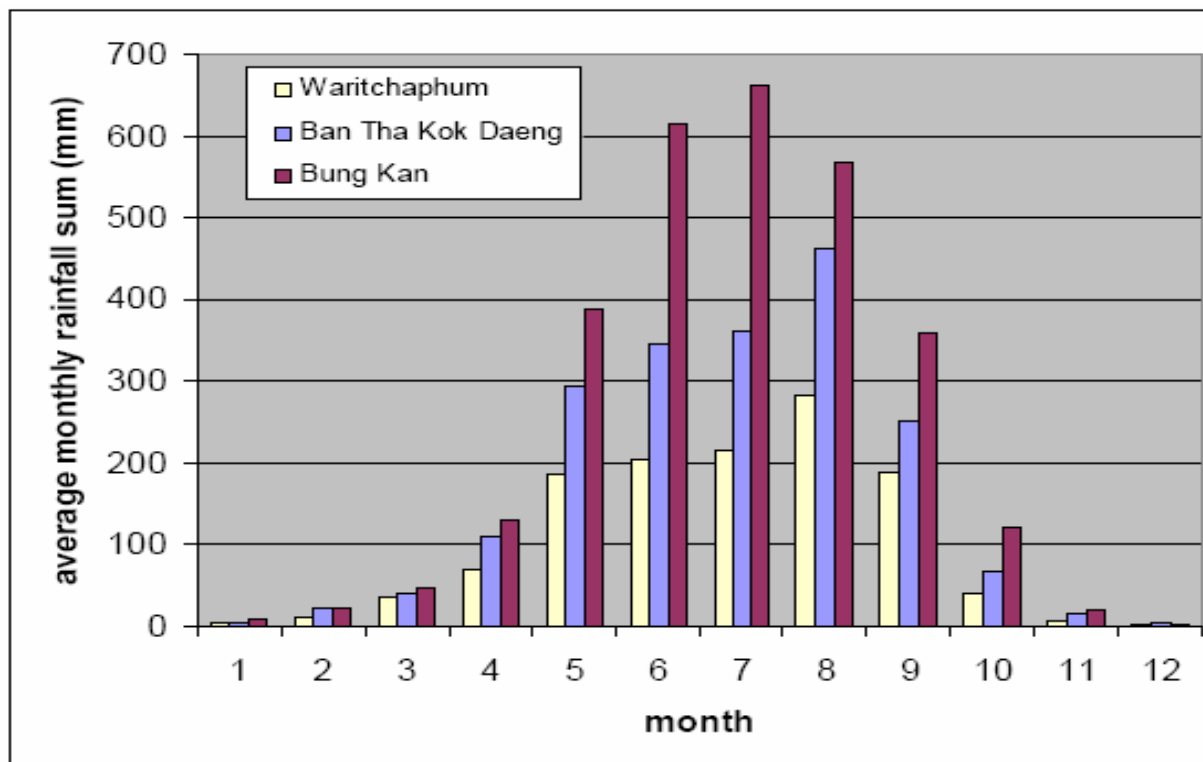


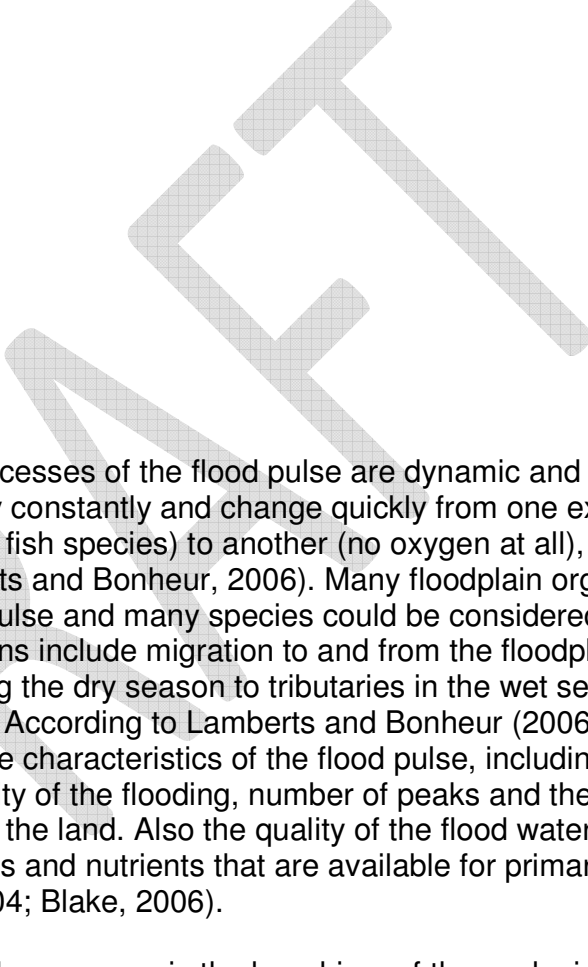
FIG 1: Average monthly precipitation at three stations in or near the Songkhram River Basin. Bung Kan District lies in the northern part of the basin, Ban Tha Kok Daeng is in the centre, while Waritchaphum District is in the drier southern sector (Source: Sarkkula et al, 2006)

Therefore, flooding in the LSRB is a function of both in-basin precipitation and ambient river levels of the mainstream Mekong River. The influence of the latter could be considered a lesser version of the well-known hydrodynamic phenomenon that occurs annually on the Tonle Sap and Great Lake in Cambodia (Sverdrup-Jensen, 2002; Kummur et al., 2005). The ratios between the permanent (dry season) surface areas and the annual flooded surface area are not greatly divergent between the two basins, with the Nam Songkhram showing a proportionately greater “pulse” effect (Blake, 2006). While the Mekong – Songkhram phenomenon may not be as dramatic spatially as that of the Tonle Sap, it is still nevertheless impressive and surprisingly, poorly recognised by outside actors until relatively recently (Blake, 2006; Sarkkula et al, 2006).

The “flood pulse” concept first coined by Junk et al., (1989) is now a widely accepted scientific term and ecological concept understood to occur in lowland river-floodplain systems in seasonal temperate and seasonal tropical regions worldwide. The concept focuses on the lateral exchange of water, nutrients and organisms between the river channel (or a lake) and the connected floodplain, and maintains that periodic inundation and drought (the flood pulse) is the driving force in the river-floodplain system. (Junk and Wantzen, 2004); It is recognized that the flood pulse concept is not widely known amongst river managers, ecologists and fishery scientists in Thailand or other Mekong Basin countries (Lamberts and Bonheur, 2007). This lack of appreciation of an

emerging eco-hydrological concept should be seen in the context of the low general importance attached to environmental considerations amongst regional water sector planners and policy makers (Dudgeon, 2000; Coates et al., 2003).

FIG 2. INSERT WET AND DRY SEASON SATELLITE IMAGES OF LSRB



The biological and chemical processes of the flood pulse are dynamic and complex. Conditions in the floodplain vary constantly and change quickly from one extreme (e.g. enough dissolved oxygen for all fish species) to another (no oxygen at all), forcing species to adapt or die (Lamberts and Bonheur, 2006). Many floodplain organisms have evolved to cope with the flood pulse and many species could be considered dependent on it for their survival. Adaptations include migration to and from the floodplain or from deep pools in the Mekong during the dry season to tributaries in the wet season and diverse reproduction strategies. According to Lamberts and Bonheur (2006), these processes are determined by the characteristics of the flood pulse, including the timing, duration, height, extent, continuity of the flooding, number of peaks and the speed at which the flood water inundates the land. Also the quality of the flood water is important in terms of the level of sediments and nutrients that are available for primary productivity in the food web (Winemiller, 2004; Blake, 2006).

For the LSRB, the flood pulse phenomenon is the key driver of the ecological system, that allows a capture fishery considered to be several times more productive in terms of yield than that of the largest reservoir fisheries in the Northeast (see Table 3 in Blake, 2006), despite the fact that the majority of the Nam Songkhram “fishery” is land, not water, for the majority of the year. This raises numerous questions about the appropriateness and efficiency of the state fishery policy that focuses principally on reservoir fisheries and aquaculture promotion, not floodplain fisheries, which are considered as relatively less important and in constant decline due to overfishing and inappropriate management regimes (Khumsri et al, 2006; Pawaputanorn na Mahasarakham, 2007). The flood pulse also underlies the productivity of the other

components of the floodplain ecosystem, both terrestrial and aquatic, which have allowed diverse livelihoods to flourish.

A historical perspective of the Songkhram wetlands

Prior to World War Two, the LSRB was part of a sparsely settled region, with villages tending to occupy elevated land surrounded by extensive semi-moist evergreen and dry dipterocarp forests that provided rich hunting and foraging, plus upper alluvial terraces that were utilised for limited wet season paddy cultivation. Villages across the Northeast demonstrated a high degree of self-sufficiency and independence from state institutions and capitalist mechanisms (Nartsupha, 1984). The forests were dissected by ephemeral streams and rivers, interspersed with seasonal ponds and swamps, which provided abundant opportunities for catching fish and other aquatic organisms. The Nam Songkhram floodplains were mainly covered with dense, seasonally inundated swamp forests (*paa boong paa thaam*), but also occasional tracts of wide grassy plains (*thung*) and bamboo stands where soils were more nutrient deficient. Old people born in the region talk about the profusion of wildlife, including elephant, deer, tiger, monkeys and crocodile that could still be found in the area fifty years ago and were ardently hunted.

The floodplains themselves were likely considered rather unhealthy, hazardous places to live, with high rates of malaria and other waterborne diseases, so local people chose to reside nearby on raised alluvial terraces to take advantage of the rich variety of natural resources they had to offer, especially fish and game. The grassy plains were also important locations to graze buffalo and cattle in the dry season, with a high local ownership of livestock relative to other areas being a feature. What trade did occur was mostly by boat along the Nam Songkhram River, with processed fish products being bartered for rice and salt produced within the basin, or some non-local consumer items produced elsewhere brought upstream from the Mekong towns of Tha Utaen or Nakhon Phanom for sale or barter. The local economy was primarily subsistence with little surplus and non-monetarised right up to the 1960s, when external changes started to encroach on the hitherto insular village institution (Nartsupha, 1984).

Following the launch of its first five year development plan in 1961, Thailand readily embraced free market economy policies under the close guidance of Bretton Woods institutions, which had three main aims: intensify exploitation of Thailand's natural resources to deliver growth; transfer some of the resulting surplus for investment in the urban economy; and facilitate foreign investment to acquire technology (Baker and Phongpaichit, 2005). The governments of the period were almost exclusively military dictatorships which were effectively able to attract significant amounts of United States and Western nation funding for rural road building, irrigation and hydropower programmes, especially in the strategically important Northeast with its close proximity to Indochina and ideologically-inspired fears of communist spread. During the mid-1960s, US military bases were permitted to be established on Thai soil, including air bases in Udon Thani and Nakhon Phanom, in order to expedite the growing war in Vietnam and "the other theatre" (i.e. Laos and Cambodia).

This regional militarization led to a rapid population growth of urban centres around the Songkhram Basin that contributed to a marked increase in local demand for natural resources, including timber for construction, charcoal for fuel and fish for food. Local companies bid for state concessions to clear the extensive hardwood forests across the Songkhram Basin, while local people were later given sub-concessions for producing charcoal from the remaining secondary forest. According to one report, logging concessions peaked between 1967 – 1972, while commercial charcoal production peaked in the LSRB between 1974 – 1976 (DEQP, 2004). As the road network improved, it became easier to both transport natural resources from the rural periphery to the population centres and for consumer goods to reach rural markets, thus stimulating the local economy. At the same time, there was a steady influx of people from other provinces in *Isaan*² into the LSRB, drawn by the abundant wetland resources and availability of unoccupied land for agriculture. Interviews with Songkhram villagers reveal high numbers of non-local settlers from provinces such as Kalasin, Khon Kaen, Roi-Et and Ubon Ratchatani, with the majority being first or second generation migrants. However, some were economic migrants from more distant origins, including ethnic Chinese and Vietnamese, also drawn by the opportunities to be had from exploiting the rich fisheries and surrounding forest products, as well as the relative peace of the area.

Yet another contributory factor in the growing melee for the natural wetland resources of the LSRB was the introduction of “commercial”, large scale fishing gears, which were far more efficient than their subsistence-oriented predecessors. Vietnamese migrants from the Mekong delta introduced large raft-mounted lift nets (*pae sadung*) and stationary trawl nets (*dtong*), placed across the river channel during the flood recession, which were able to catch massive amounts of fish over a relatively short period of time. Later still, the introduction of fine meshed nylon netting onto the market allowed teams of villagers to string walls of netting across streams with collection points (*gad dawn*) and harvest most aquatic life migrating off parts of the floodplain at the end of the flood season. With widespread adoption of non-traditional fishing gears, fish stocks came under increasing pressure just as populations were growing fast and markets were becoming more accessible (Petchkam, 1997; Blake and Pitakthepsombut, 2006).

During the politically turbulent late 1970’s, the first agribusiness companies started to appear in the LSRB, encouraged by market liberalization policies, ideologically-driven overseas aid programmes that were improving roads, irrigation and power supplies, plus a strong central government focus on export-led agricultural and industrial growth (Bello et al., 1998; Baker and Phongpaichit, 2005). The agricultural frontier “moved through the upland forests like a firestorm” with the cultivated area tripling in less than forty years (Baker and Phongpaichit, 2005). While most forest encroachment occurred in the marginal uplands of the Northeast to plant cash crops like cassava, maize, sugar cane and jute; the lowland wetlands were also converted to agricultural land around the same period by a combination of draining and deforestation. A key feature of this period

² Isaan is the popular Thai name for the geographically and culturally distinct Northeast Thailand, which accounts for approximately one third of the Kingdom’s area and population.

was a rapid expansion of irrigation reservoirs, which in the case of the Songkhram Basin meant inundating fertile floodplain land, often with no command area downstream and no infrastructure in place for pumping the water to surrounding land. At the same time, ambitious plans were being hatched by state agencies to dam the mainstream Nam Songkhram near its confluence with the Mekong creating a massive reservoir to pump irrigate over 90,000 ha of elevated farmland (Blake and Pitakthepsombut, 2006a).

In some areas of the LSRB, there was increasing competition between local people and agribusiness for the land, which was seen as “unused wasteland” (*“tee rok wang plao”*) and essentially up for grabs. According to Blake and Pitakthepsombut (2006a), the first company to establish an integrated tomato production and processed product export business was called Tawan Farm Company Ltd., in 1978 in Segaa District of Nong Khai on the northern fringe of the Nam Songkhram floodplain. Several closely related companies established operations in the LSRB over the two decades, each following a basically similar model of state subsidisation and promotion, through strong cooperation and collaboration of various state agencies. Within a few years, agribusiness was reported to have occupied about 9,600 ha of land in the LSRB for intensive agriculture and established several crop processing plants (Blake and Pitakthepsombut, 2006b).

If the two decades before 1977 can be typified as the “Era of fishery commercialization; logging concessions and charcoal making boom” and the two decades post-1977 may be typified as the “Era of agricultural intensification and expansion of agro-industry”, the last decade or so could be described as the “Era of industrial tree plantation expansion” (see Blake and Pitakthepsombut, 2006a). This modern period has seen a deepening and consolidation of market-based capitalism, industrialization, urbanization and regionalization, as well as a growth in civil society institutions and a trend towards democratization and mass society (Baker and Phongpaichit, 2005). Continued state promotion of private agribusiness ventures on one hand and a policy of reforestation of “degraded” forests on the other, has allowed a rapid and sustained growth in monocrop industrial tree plantations (principally rubber and eucalyptus), across the upper Northeast. According to Blake and Pitakthepsombut (2006a), much of the plantation expansion has been by smallholder farmers replacing land formerly under cash crops, but in the LSRB there has also been widespread encroachment into natural forests, including seasonally flooded forest.

Fishery resources as common property rights

For many communities, capture fisheries are without a doubt the most valuable component of natural resource-based livelihoods in LSRB. This assertion is backed up by several studies at various scalar levels. Hurtle and Suntornratana (2008), in a pan-LSRB study of 447 villages, found that between 80 – 93 % of households are involved in the fishery part-time and only about 3 – 6 % fish “commercially”. Based on a household catch estimate of 207 kg/year, a total fish catch for the LSRB of 34.3 thousand tonnes per year was extrapolated. Fishing is primarily for domestic consumption with an estimated 249 kg/year of fish being consumed per household. Much of this is consumed fresh, but there is also an active local fish processing industry present for both sale and home consumption. During periods of glut, especially in the

latter part of the wet season, fish may be preserved for by salting, drying, smoking, pickling and fermenting in various forms. In some villages where the fish processing cottage industry is particularly active, villagers rely on out-of-basin wild and cultured fish for supplies.

At a more localised level, in a detailed survey of 261 households in 10 villages located next to the Nam Songkhram River, Khonchantet (2007) found that the average value of fishery products harvested was 17,750 baht/household/year, which accounted for about 46 % of all natural wetland products harvested. In addition to fish being caught for consumption and sale, there is known to be a thriving and documented fishery in live fish for the aquarium trade and a wide variety of other aquatic organisms harvested on a seasonal basis (Blake and Pitakthepsombut, 2006b).

Fishery resources up to a point have generally been regarded by riparians as essentially open access, common pool resources, but with some notable exceptions. Because the resource itself is mobile and seasonal, this has mitigated against formal ownership rights being declared. Thus while rice fields and rice plants have long been subject to *de facto* and *de jure* individual property rights, the fish and aquatic organisms that enter them, have generally been regarded as common pool resources. Hence, any member of the community could legitimately catch fish, crabs, shrimp, etc. in another person's rice fields, so long as they did not damage the rice plants. In practice, as land was not limited, people mostly fished their own rice fields and natural watercourses rather than others, but this has changed in recent years as the resource has been depleted and has led to local conflict. For example, people that have stocked fish in their rice fields to practice rice-fish cultivation have frequently been dismayed their investment regarded as a common pool resource and subsequently abandoned such practice.

Traditional property rights regimes concerning fisheries should not be regarded as static or unresponsive to change, but as dynamic and adaptive to external factors and conditions. This can be illustrated with regards to rights changes associated with different fishing gears, described by Kuaycharoen (2003) as a process of "struggle, negotiation and flexibility between traditional owners and authorities". Considering the fishing method of *gad*³, traditionally villagers (usually as a household unit) would clear and claim rights over a particular location (*luang gad*) for placing their fishing gear that would become a community-recognised right and inheritable (*gad mun*), if they continued fishing their year by year. According to Kuaycharoen (2003), the traditional system started to change in the late 1980's when newly empowered and state sanctioned community leaders – sub-district chiefs (*kamnan*) and village heads (*poo yai*

³ *Gad* or *gad dawn* is an efficient fishing method whereby a waterway is blocked by a barrage net and harvesting device/s during the flood recession and fish migrating downstream are caught as they leave the floodplain. It is controversial as it is considered a destructive fishing technique by many and is illegal, according to Fishery Department laws, leading to state-village conflicts.

baan) – decided to revoke the de facto individual or collective rights and replace them with “community rights” where the fishing rights to the *luang gad* were sold through an auction system to the highest bidder and money raised was used for village “development” purposes. Apparently, in most cases the money raised from the auctions was split between the village (90 %) and the Sub-District Council (10 %), which subsequently became the Sub-District Administration Organisation following the 1997 Constitutional amendments. This local fund raising or taxation from selling off natural resources was supported by state institutions as an example of appropriate decentralization inline with government development policy. The alterations to the existing regime for *gad* did not change in a single year, but rather involved local power conflict and negotiations, and often ended up with non-locals controlling the rights to the *gad*, creating tensions. The price bid for each location changed year by year, based on a complex mix of factors including historical productivity; the timing, extent and depth of flooding and local price fixing and power relationships. By 1999, the *gad mun* rights system had almost been completely replaced by *gad* auctions, which still involved community participation and common interest to work, even though the traditional system had been commercialized.

A similar change of regime occurred with the management of floodplain ponds over the last twenty years. The Nam Songkhram floodplain is littered with natural and artificial ponds, both permanent and seasonal, that nominally fall under the control of one village or another, that may decide who enjoys the fishing rights to that pond. The ponds may be either privately owned and managed, or come under a community management regime as a common resource. Often it is the village committee that decides on management regime, after consultation with the community (Kuaycharoen, 2003). Sometimes they decide to keep it as a communal resource, with various rules and regulations regarding usage, and sometimes it is subject to bidding at auction, similar to the *gad* system. Successful bidders are given exclusive rights to the pond to fish, usually for a fixed period of time e.g. October to January, after which time it reverts to a community fishery once more. It is generally the case that when the floodplain is inundated during the wet season, the whole waterbody becomes a single open-access common pool fishery, and no areas are barred for fishing. This means it is encumbent on owners of private ponds or aquaculture facilities to secure their stock during periods of flooding.

Other fishing methods that are dependent on specific localities to announce individual usufruct rights of ownership include, cylindrical woven bamboo traps (*lawp*); stationary trawl nets (*dtong*); and raft mounted lift nets (*pae sadung*). These methods are subject to similar property rights to *luang gad*, with individual households staking claims to particular spots on rivers or streams that through regular seasonal use gain legitimate *de facto* rights in the local community. The methods themselves are mostly limited to certain seasons or hydrological conditions when they can be successfully used, and often the location is crucial for making large catches. Thus, the best *luang* have a value that in recent decades has gained a monetary value, allowing it to be inherited, sold or rented like private land rights. According to Kuaycharoen (2003), with *luang dtong*, the property rights regime allows *de facto* owners to retain rights over the location, even

when it ceases to be used by them. She stresses the multiple rights and flexible nature of local common property rights regimes, where individual rights to seasonally fish particular locations may be transferred to community rights and later revert to individual rights again following auction.

Land reform and resource rights

With the advent of active resource commercialization, market penetration and exogenous development initiatives from the 1960s onwards, the fishery resources of the LSRB became progressively under increasing pressure, eventually leading to local property regimes governing the fisheries becoming more complex (Kuaycharoen, 2003; Blake and Pitakthepsombut, 2006a). Most floodplain land was until a generation ago predominantly without de jure property rights and the state classified most such areas as “public land”. The Land Reform Act and formation of an Agricultural Land Reform Office (ALRO) in 1975 started to challenge this designation with interesting results (Blake and Pitakthepsombut, 2006a). While this agency singularly failed to redistribute land from large land owners to small, it did manage to expropriate vast swathes of de facto common land and ostensibly bring it under state management.

Such was the case with the LSRB, where 7,200 ha of Nam Songkhram floodplain land in Nakhon Phanom Province alone were brought under ALRO control, split into blocks for agricultural development and cleared of vegetation (predominantly *paa boong paa thaam*) (Blake and Pitakthepsombut, 2006a). Each family in the ALRO scheme was given a uniform 18 rai (approximately 3 ha) block of land with limited land title to cultivate rice and agricultural extension was provided for a limited period. The consequence of this state-led privatization of the commons and wholesale landscape transformation which ignored any existing land tenure and resource management regime, was predictably a rise in local conflicts and a perceived crash in natural resources, especially the economically important fisheries (Watershed, 1999; Blake and Pitakthepsombut, 2006b). Agribusiness and national politicians were other active accumulators of the public land and seasonally flooded forest of the LSRB over the last two decades.

Neglected knowledge & Tai Baan Research

“*Tai Baan Research* represents an approach that builds on local people’s wisdom, experience and traditional culture for assessment and monitoring of natural resources and livelihoods. It presents an opportunity for dealing with the challenges of long-term regular monitoring of complex, dynamic river systems that allows local resource users themselves to set their research agenda, collect and analyse data and contribute to making informed decisions.” Richard Friend, IUCN Programme Manager, MWBP (quoted in Blake and Pitakthepsombut, 2006c)

Following the selection of the LSRB as the Thailand “Demonstration Site” for piloting good wetland conservation practice under the four nation Mekong Wetlands Biodiversity

Conservation and Sustainable Use Programme (MWBP)⁴ in 2003, it was decided to trial a novel approach to wetlands management, using a participatory, grassroots, action-oriented methodology called “Tai Baan Research”. As outlined in the quote above, Tai Baan Research was regarded as an opportunity to engage resource users directly in research and monitoring of wetland resources, where they were not only considered active participants in the research process but also primary beneficiaries. The method had previously been developed at communities in the Mun Basin, following the construction of controversial hydropower and irrigation projects (Blake and Pitakthepsombut, 2006c).

Tai Baan Research evolved out of a history of local community, civil society, private sector and state conflict, where common understanding was frequently difficult to achieve because of a perceived lack of local ecological knowledge (LEK) and low transparency and participation in the externally-driven research process (e.g. Environmental Impact Assessments and Social Impact Assessments) of state infrastructure projects decision-making. This was the case in the Nam Songkhram Basin, where a large irrigation project that would require damming the river near the Mekong confluence and creating a 255 km² reservoir had led to local and national controversy and struggle for many years (Lohmann, 1998; Blake and Pitakthepsombut, 2006a and 2006b). Although frequently simplified as a central state – local community struggle, the reality was more complex with certain quarters of government as uneasy about the project as advocacy NGO’s, some academics and local people (Lohmann, 1998). Thus, as central government agencies were split in opinion over the need to dam for irrigated agriculture or conserve the LSRB as a wetland, the ascendant MWBP found a fertile ground in which to trial the Tai Baan Research approach as an acceptable way to learn lessons from the local.

This paper does not intend to delve into the methodology, findings and outcomes of Tai Baan Research as these are covered comprehensively elsewhere (e.g. Blake and Pitakthepsombut, 2006a; Blake and Pitakthepsombut, 2006c; Friend, 2007) and these are not the primary focus of this document. But briefly, it should be mentioned that a LEK approach like Tai Baan should not be considered as contrary to scientific approaches to learning, but rather complimentary. In some ways, as pointed out by Blake and Pitakthepsombut (2006c), Tai Baan Research resembles conventional, positivist, scientific research approaches (e.g. employs empirical methods, data collection, analysis and interpretation), but is unconventional in others (e.g. is non-

⁴ MWBP was a joint programme of the four riparian governments of the Lower Mekong Basin – Cambodia, Lao PDR, Thailand and Viet Nam – managed by the United Nations Development Programme (UNDP), The World Conservation Union (IUCN) and the Mekong River Commission (MRC), in collaboration with and other key stakeholders. With core funding from the Global Environment Facility (GEF) and the Royal Netherlands Embassy in Thailand, the programme aimed to address the most critical issues for the conservation and sustainable use of natural resources in the lower Mekong wetlands. It ran for one phase between 2004-2006 before being prematurely closed down. (more details available at website: www.mekongwetlands.org)

extractive, more holistic, more experiential and allows for cultural-spiritual explanations of phenomena). In this sense, Tai Baan is closely tuned to the local context, involving high participation of the resource users and directly responding to their needs and perspectives. However, it does require external research coordination, assistance to record, systematize and disseminate findings, plus financial backing to succeed.

Case study of Tung Mon wetlands - a three dimensional commons

The Tung Mon wetlands provides an interesting case study in complex property rights regimes, owing to the fact that it is nominally privatized. Situated on a wide floodplain bordering the Nam Songkhram river to the northwest of Sri Songkhram district town, it covers an area of approximately ten square kilometers (refer to Fig. 2). Originally the area was a complex riverine floodplain wetland with a variety of habitats represented including seasonally flooded forest, marsh, grassland and various seasonal and permanent ponds and streams. It is surrounded by four villages which traditionally used its resource base for fishing, hunting, collection of NTFP's, livestock grazing, timber, fuelwood and a variety of other uses, with the land being considered a commons. Up until three decades ago, nobody had formal ownership claims on Tung Mon and the government regarded it as public land (*tee satarana*). Local villagers cleared small areas of seasonally flooded forest for growing dry season rice and vegetables, but ownership and use was based on traditional usufruct rights and land was plentiful, allowing rotation of plots.

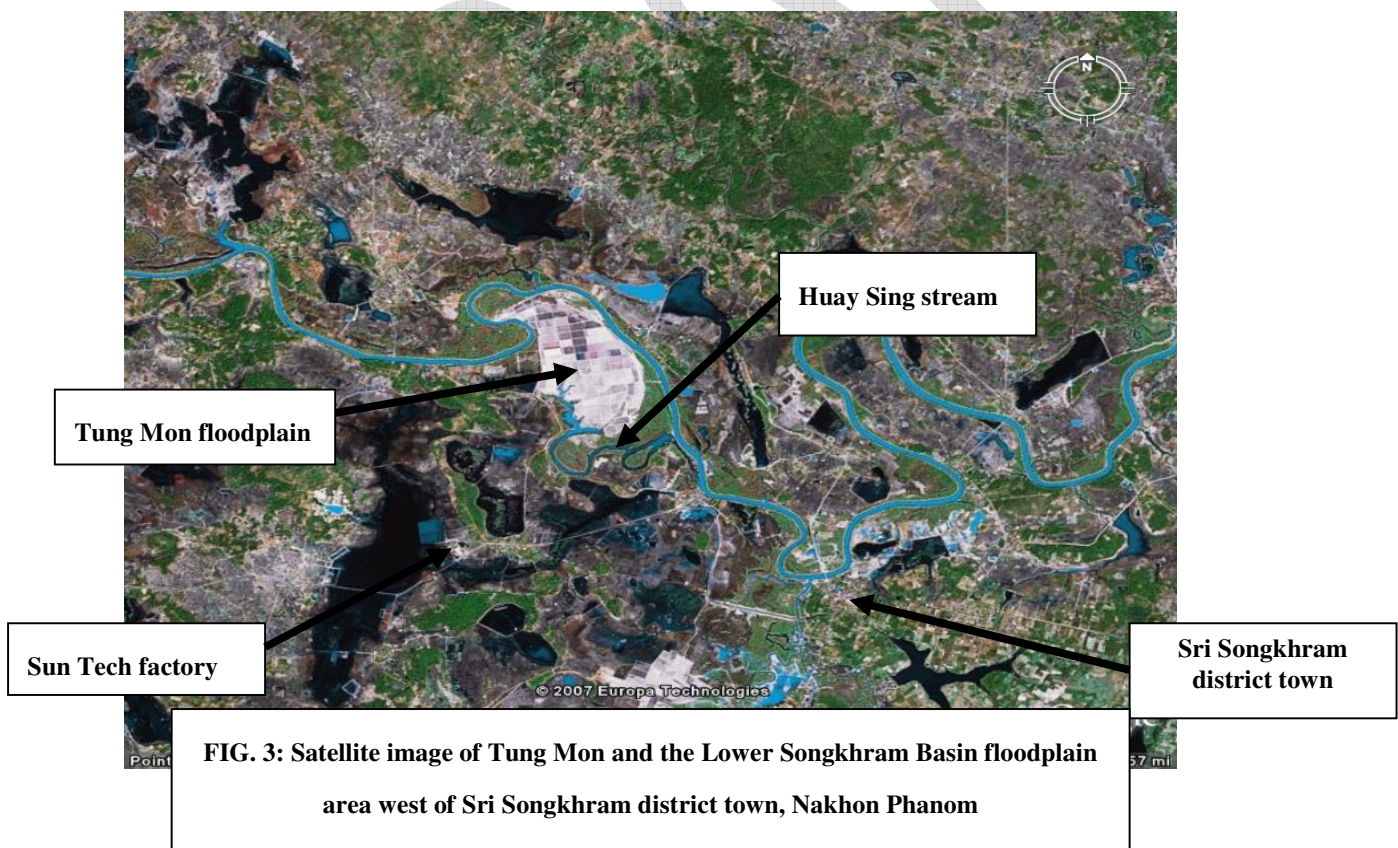


FIG. 3: Satellite image of Tung Mon and the Lower Songkhram Basin floodplain area west of Sri Songkhram district town, Nakhon Phanom

Tung Mon is located about 70 kms upstream from the Mekong confluence and lies in a zone strongly influenced by Mekong hydrology, annually experiencing a backwater effect and occasionally a marked backflow from the Mekong. The low riverbanks and flat topography allows floodwaters to remain on the floodplain for 3 - 4 months, with the height, duration and extent of flooding being determined by a number of factors. At its peak in late August or September, floodwater can cover parts of the floodplain to depths of six metres and it takes on the appearance of a vast shallow lake. Six months later the same area would be naturally devoid of surface water and become a wide grassland savannah, surrounded by bamboo and scrub forest (*paa boong paa thaam*), with larger hardwood trees occupying the forest fringe along the riverbank levees.

The Tung Mon area was formerly biologically rich, with a dynamic mix of terrestrial and aquatic species occupying the area on a temporary, cyclical basis. During the floodplain's aquatic phase it would become home to a diverse assemblage of fish species, thought to number at least 124 species, including being an important feeding ground for the giant Mekong catfish (*Panagasianodon gigas*), a migratory catfish that has been caught locally at weights up to 270 kgs (Tai Baan Research Network of Lower Songkhram Basin, 2005b). This and other large herbivorous species of fish are thought to have been attracted to the area by the presence of mineral-rich soils (*din euad*), that encouraged the growth of dense stands of filamentous algae (*tao*) upon which the fish fed for short periods of time during flooding. Part of the understanding about local resource usage past and present was made possible by the documented findings from the Tai Baan Research team of Ban Tha Bor, just to the south of Tung Mon (Tai Baan Research Network of Lower Songkhram Basin, 2005a and 2005b).

Thirty years ago Tung Mon land was officially classified on land use maps as "*paa lamor*" (scrub forest) or "*tee rok wang plao*" (roughly translated as "wasteland"). In the mid-1980s, agribusiness agents started contacting village leaders with offers of purchasing the Tung Mon land tract from local people. With the tacit approval of local state authorities, they used a variety of tactics to win over the villagers to agree to sell what was officially public land, but with complex unmapped *de facto* local ownership rights. In the case of the small Ban Tha Kong, the villagers were offered grid electricity connection in return for signing over land rights to a sizable area of Tung Mon used for fishing and livestock grazing. At the time, this apparently seemed like a good offer to the villagers who were already on a waiting list for connection by the state but were anxious to speed up the process. They were asked to sign documents for plots of land which they had never "owned" in any legal sense, but it had apparently been approved by officialdom and the village headman, and avoided external scrutiny at the time.

Around 1987-1988, an agro-industrial company called Sun Tech Group PCL⁵, started clearing the vegetation on Tung Mon, levelling the land and carving it up into equal blocks of about 400 rai each. The blocks were divided by dirt roads and drainage pipes were laid, with the total area of cultivated land extending to over 7,000 rai. In 1989, Sun Tech Group PCL opened a tomato and pineapple canning factory just to the south of Tung Mon, having first constructed a 6 km², shallow reservoir called Nong Sang, from which to draw water for processing activities. Tung Mon was rapidly transformed from a natural wetland into a massive tomato plantation, using high external input, intensive methods and employing several hundred local people during its first few years of operation, both for cultivation activities and within the factory.

Essentially the Sun Tech Group activities effectively converted, privatised and enclosed what had previously been a productive open-access, multi-resource commons utilised by up to six hundred local households. During the dry season tomato cultivation period, the company was able to exclude villagers through physical methods (e.g. fencing) and psychological methods (e.g. threats and intimidation). Numerous anecdotal reports attest to the company staff threatening shooting livestock of villagers from surrounding villages if they wandered on to Tung Mon to graze and conflicts arising from villagers attempting to access NTFPs (e.g. bamboo shoots or edible leaves along the margins of the site). There were also reports of fish deaths in the Huay Sing stream, with the cause of death understood to be chemical run-off from the tomato pest control programme, which at one time used aerial pesticide spraying, as well as regular tractor-mounted spray techniques.

Interestingly, the enclosure and privatization regime was only effective so long as the site was predominantly a terrestrial habitat. The tomatoes were harvested by March, after which the fields were fallowed and left until the following November. Around July each year, the Nam Songkhram river bursts its banks and the Tung Mon reverts to an aquatic habitat phase. This change in state also signaled a change in property rights regime. As soon as floodwater covered Tung Mon, villagers could once again access the common pool resources, including fish and a variety of living aquatic resources denied them in the terrestrial phase. Indeed, even the giant Mekong catfish continued to be occasionally caught at one specific location at the head of Huay Sing stream (see photo) and specimens were occasionally seen surfacing by one local observer up until 2007. While villagers claim that fish catches have decreased significantly since the conversion of Tung Mon to intensive agriculture and widespread loss of seasonally flooded forest in the LSRB, they tend to blame over-fishing as much as habitat loss for the perceived decline in fisheries.

⁵ Sun Tech Group Public Company Ltd is a Stock Exchange of Thailand listed company, which previously had principal activities involved in the manufacture and processing of canned tomatoes and whole kernel corn and the rental and sales of movie video cassette tapes and laser discs (http://wrightreports.ecnext.com/coms2/reportdesc_COMPANY_C764H6820). It was reported to employ 135 persons in 2006 with sales of 1.8 billion baht.

INSERT PHOTO OF GMC FISH NET

Following the 1997 Asian economic crash, Sun Tech Group experienced financial troubles and the Tung Mon tomato plantations gradually declined in extent until the 2006-07 dry season, when the company abandoned any pretence of farming the site at all and the factory was barely operating. This agribusiness withdrawal from Tung Mon has allowed a partial return of the former commons regime to return, with villagers once more grazing cattle and buffalo, collecting NTFP's and fishing in the watercourses without fear of immediate expulsion for trespass or having their livestock shot or poisoned, as had been the case in the past. However, this return of commons may be short-lived, as the company has been actively trying to coerce villagers in Ban Tha Bor on the southern fringe of Tung Mon to sign land transfer documents, apparently because they need to legitimize ownership of the land according to the law, which was never fully completed in the initial land acquisition. The significance of this move is that the company still has an active interest in capitalizing on its land holding, which is now worth many times more than the relatively small sums it originally invested, but are subject to it being recognized as the legal owner of Tung Mon. The construction of a downstream dam for water management and permanent inundation of the land, could allow its original investment to be recouped through mandatory state compensation.

Conclusion

“The ability of natural resources to continue to support poor people’s livelihoods in the Mekong is at a crisis point. Forests and rivers are in a state of rapid ecological decline caused by human over-exploitation. Some of this has been an inevitable corollary of rapid population growth, however a large part has resulted from the establishment of private (commercial) tenure rights over common property resources, such as through commercial logging, plantations, commercial fishing lots and hydropower dams. Moreover, such a shift in resource tenure serves to deny poor people access to resources they depend on for their livelihoods.” (Cornford and Matthews, 2007).

The above situational assessment of the entire Lower Mekong Basin fairly concisely describes the ongoing struggles and fate of the LSRB communities, after almost five decades of exogenous development interventions. From rich natural wetland with high

productivity and resilience to outside shocks to today's degraded semi-natural wetland with decreasing resilience and increasing external pressures on its resources, the LSRB wetlands have been fundamentally altered in little more than a generation. Local communities as traditionally passive targets of "development" aid have been a poor match for the power of the state and capital that has swept through even the most isolated areas of Thailand, transforming landscapes and management regimes in its wake. The LSRB wetlands held out marginally longer than most, but it too eventually became an agricultural frontier, to be judged largely in terms of its land value to powerful outside interests, that poorly understood its role and functions as a "wetland". Hence, it has long been perceived by dominant state actors as a dryland with a flooding problem and policy has been tailored towards solutions to this dilemma. The issue of property rights has subsequently been a central point of conflict, but rarely adequately debated, perhaps because of the complex questions it raises.

As has been examined in this paper, the LSRB had a complex *de facto* property rights regime which allowed various levels of individual (private) and community use of resources that explicitly recognized the dynamic nature of the wetland hydro-ecological regime. Not only do these *de facto* property rights related to fishing vary according to season and location (i.e. spatio-temporally), but they also vary according to fishing gear used. This highlights the fact that the *de jure* property rights subsequently claimed by the state, elites and private business were imposed on the LSRB floodplain with land value and agricultural management in mind, rather than any recognition of diverse wetlands values and management, as was inherent in traditional *de facto* property rights. In this sense, the LSRB case is not dissimilar to findings of other common pool resources studies conducted in African floodplain situations which examined institutions and actor relationships in five cases and found a high degree of state control and partial dismantling of local rules and regulations in present day regimes (Haller, 2005).

An alternative approach developed to understand local livelihood patterns and wetlands ecosystems, Tai Baan Research demonstrated that local villagers not only recognize in detail the transient nature of resources such as migratory fish stocks, but have adapted their livelihood strategy to benefit from this. As direct resource users, local people have developed complex locally situated resource use and rights regimes, that have frequently been ignored or missed in the rush to implement water resources management projects with their attractive logic of solving state-constructed problems of "drought and flood". Hence, this paper argues that until policy and regional decision-makers recognize the unique multi-resource and spatio-temporal characteristics of the LSRB's resource base, which evidently does not lend itself to conventional *de jure* property rights regimes, continued resource degradation and user conflicts will be inevitable outcomes.

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