

Recent land dynamics in the Tonle Sap Flood Plain and its impacts on the local communities

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In Kampong Thom the ongoing and widespread construction of dry season rice perimeters is resulting in a complete reshaping of local agro-ecosystems in the transition zone of the Tonle Sap Biosphere Reserve. The present article aims at exploring some of its impacts on the local communities.

Background

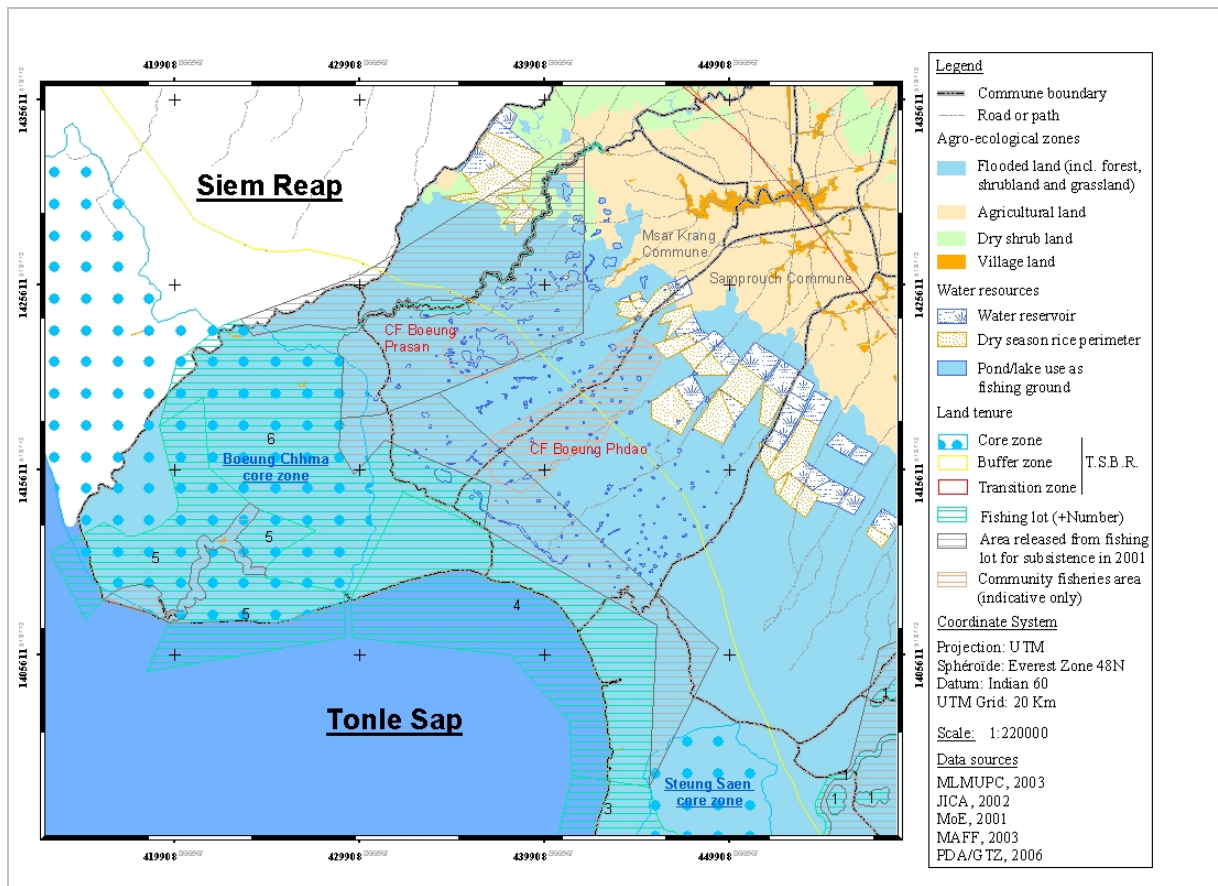
This article is based on the experiences of the multi-sectoral Rural Development Program (RDP) supported by German Technical Cooperation and the Ministry of Rural Development. Amongst other activities¹, RDP supports the Fisheries Administration and the Department of Environment in the implementation of Community-Based Natural Resources Management (CB-NRM) activities in Stoung district (Samprouch and Msar Krang communes). The approach consisted initially of a village-based holistic approach in the sense that it aimed at integrating fisheries and forestry management with environmental protection measures. These principles were integrated in a village NRM regulation endorsed by a village NRM committee. Whereas the activities turned out to be successful at the local level, their institutional recognition by the fisheries administration was weak. Seeking official recognition, the village-based approach was transformed into a commune-based community fisheries (CFi) approach in 2005, as this approach will more likely be in line with the newly approved sub-decree on CFi. The activities are now an integral part of Tonle Sap Environmental Management Project comprehensive support to CFi in the Tonle Sap flood plain.

Traditional land use patterns in the Tonle Sap Flood Plain

The map displayed below shows the agro-ecological zoning of the area. It stretches from the Tonle Sap flood plain (consisting of a sequence of flooded forest, shrub and grassland) to the agricultural zone where the villages are located and then to the dry shrub land.

At the edge of the agricultural zone, the flood plain is characterized by continually changing land use patterns ranging from rice cultivation, grassland grazed by cattle and shrub land where a variety of non timber forest products can be collected (Evans and al, 2003, Diepart, 2007). This diversity of land use is maintained through a variety of practices such as fire, ploughing, fallowing or grazing with the objective to ensure a flexible and diverse supply of natural products of crucial importance to the local livelihoods, while maintaining the fertility of the overall agro-ecosystem. The system is rational. The different rice cropping systems are adapted in different water depths and encompass a very important aquatic biodiversity (Balzer and al, 2002). The grass is crucial as fodder for the cattle that generate a predominant part in the farming income portfolio (Diepart, 2007) and the shrubs are also important for the energy supply of the households. Fishing in the recession ponds of the flood plain is part and parcel of this logic aiming at maintaining multi-functional agro-ecosystems.

¹ The Rural Development Program Kampot/Kampong Thom is an integrated, multi-sectoral rural program working in close cooperation with the IFAD funded Community Based Rural Development Program (CBRDP). Besides natural resources management, the key areas of GTZ/DED's program activities comprise: agriculture development, rural infrastructure creation, community development and decentralized development management.



Map: Agro-ecology and tenure management in the area

The recent land dynamics and its impacts

In 2001, the removal of fishing lot boundaries released a so-called subsistence area where local communities were allowed and encouraged to establish community fisheries schemes. In line with this dynamic, RDP has been supporting different villages in establishing two community fisheries organizations, partly located in the buffer and the transition zones of the Tonle Sap Biosphere Reserve: the CFi of Boeung Phdao in Samprouch commune and the CFi Boeung Prasan in Msar Krang commune (see map).

Since 2005, at the edge of the agricultural zone, private entrepreneurs have started to build structures consisting of one water reservoir and one dry season rice perimeter each. The flood water is stocked in the upper reservoirs in the rainy season and flows by gravity from the reservoirs to the lower irrigated dry season rice perimeters (see map).



Picture: a view on a construction site of one of these structures

An early agreement signed by the provincial governor stipulates that the dry season rice perimeters are to be operated in close cooperation with local people who are meant to provide the labor force needed for the construction and agriculture related work arising from these dry season rice perimeters. The modalities of this cooperation, however, are not yet clearly stated. The vision of the initiative is to develop this so-called “unoccupied” land at the edge of the agricultural zone and to offer new employment opportunities to the local people, par-

ticularly during the dry season. In addition to those hoped-for benefits, however, the dry season rice perimeters also upset the traditional land use patterns, fish and human migration patterns, biodiversity and the water control in the area.

The impacts on peasants' production systems

The traditional use of the area described above is directly threatened by the new dry season rice perimeters. First, the dramatic consumption of land by the perimeters reduces the grassland area and leads to a shorter fallow period thus affecting negatively both the fertility and biodiversity of the system. Second, access to grazing areas and fishing ponds is more difficult because of the mere existence of the massive perimeters within the same territory.

It is worth stressing that both of these impacts are even more acute for the most vulnerable households as the Common Property Resources constitute, in relative terms, a more important part of their cash and in-kind income portfolio (Diepart, 2007). Furthermore, the envisioned benefits the farmers were supposed to get from the dry season rice perimeters are still questionable at this stage: Most of the local people interviewed in the area (Msar Krang and Samprouch communes) said that so far they were neither recruited for the construction nor as wage laborers inside the cultivated area. The entrepreneurs investigated stated that this was because they want to make sure the system can run without local peasants' involvement during the first years.

The impacts on seasonal migrations and water control

In the area, fishing is a pivotal activity for the vast majority of households, both as a source of income in the dry season and as an input for small-scale units of fish processing (Mom, 2006). Fish is also a major source of protein in the daily diet of rural households. The destruction of shrub land by the establishment of the huge structures threatens the reproduction of certain fish species, especially those using the flood plain as their main spawning grounds (GTZ, NRM Component, 2005). Moreover, a significant number of fish fingerlings are being caught inside the reservoirs resulting in a decrease of the fisheries' productivity, especially in the recession ponds located in the vicinity of the reservoirs. The fishermen are already experiencing this loss. During a meeting, a group of villagers in Doun L'a claimed: "*before these reservoirs, we were selling fish and other aquatic organisms. Now, these reservoirs are converting us to fish buyers from local entrepreneurs operating the reservoirs*".

A couple of questions still remain unanswered. It is not clear, for instance, how the water regimes of seasonal flooding and recession will be affected by the storage of water in the reservoirs. As the start of the water recession gives the biological signal for the migratory species to start the migration down to the Great Lake, it is also not clear how this storage will affect the lateral migration of fish to the Tonle Sap Lake. One can also assume that the massive presence of irrigated perimeters will push the seasonal migratory flows of fishermen to settle closer to the fishing lots and increase the likelihood of conflicts in these very sensitive areas.

Land governance

The institutional and legal arrangements governing access to and control of the land are critical for the current and future development of the area. The provincial administration gives the authorization to each individual investor for the construction of a perimeter but the documents including agreements made available to us do not clearly state on what legal basis these agreements are made. A written agreement drafted by the provincial governor suggests that they could be land concessions (social or economic) or economic concessions, but the legal procedures to identify the land and monitor the processes are clearly not in place. A declaration by the provincial governor includes vague information about the involvement of local people in the process. The newly irrigated lands are supposed to be re-distributed to them in an undefined period of time and the establishment of water user group communities is also planned. Yet, at the time being, none of these statements are yet followed by actions. Furthermore, cases of fishing ponds encroachment have already been reported (Ly and Diepart, 2006).

Concluding remarks

Geographically and institutionally, the community fisheries schemes are “in the center” of the multi-dimensional issues highlighted above. CFi seem indeed an interesting option to avoid or limit the different negative impacts of the new constructions. First, in order to maintain the diversified agro-ecosystem so crucial to local communities, community fisheries areas can integrate different land use patterns including shrub and grass land located in the vicinity of fishing grounds. Second, by defining protected areas inside the CFi schemes (i.e. a fish sanctuary), the CFi areas could also be privileged fish spawning places to limit the decline of fish productivity due to the water retention basins. Eventually, lands under CFi areas might be registered officially as state public lands by the Ministry of Land Management, Urban Planning and Construction. This official recognition might provide stronger land security to the rural communities because, for one thing, economic land concessions and social concessions, which might be the legal basis for the retention basins, are banned on state public land. This recognition might therefore help the communities to better negotiate with local administrations whenever conflicts or irregularities arise.

References

Balzer T., Balzer, P. and Pon, S. (2002). *Traditional use and availability of aquatic biodiversity in rice-based ecosystems. Kampong Thom Province, Kingdom of Cambodia*, in Biodiversity and the Ecosystem Approach in Agriculture Forestry and Fisheries, Food and Agriculture Organization, Rome, 17 p.

Diepart J.-C. (2007). *The Problems and Challenges of Cambodian Rural Economy. Between New Governances and Peasant's Realities. The Case of Kampong Thom Province*. (Thèse de doctorat in French), Belgium, Gembloux Agricultural University, 350 p.

Evans, T., Gray T., Hong, C., Sry, M. and Lou, V. (2005). *Farming and its impact on flooded grassland around the Tonle Sap Lake, a Survey in the Kruos Kraom Area of Kampong Thom*, Wildlife Conservation Society, Phnom Penh, 39 p.

GTZ-NRM Component (2005), *Fish and Pond inventory in Samprouch Commune*, GTZ Rural Development Program Kampot/Kampong Thom, Kampong Thom, CD-ROM data.

Ly, K. and Diepart, J.C. (2006). *Report on an investigation about the issues of rice cultivation in the vicinity of water reservoirs in Stoung district*, GTZ-Mlup Baitong, Kampong Thom, 6 pages.

Mom, S. (2006). *Community-Based Fisheries Management: A case study of Doun L'a and Spean Krong Community Fisheries in Kampong Thom Province, Cambodia*, (MSc thesis), School of Environment Resources and Development, Asian Institute of Technology, 76 p.

Bibliographic Note

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