

CAMBODIA'S AQUARIAN REFORMS: THE EMERGING CHALLENGES FOR POLICY AND RESEARCH

The main objective of this document is to make a modest attempt to highlight the challenges which are emerging with the current phase of Cambodia's aquarian reforms -- the most important component of which is the current transition from fishing lots to community fisheries. The challenges include the realms of institutional and policy reform, local action, innovation and research. We contextualize our effort by commencing with an assessment of the importance of the aquatic resources and by providing a brief historical background to the reforms. This is followed by an examination of the changes in the access and property rights and the system changes which have been brought about as a result of the reform. How some of the transitional changes can be assessed and the manner in which the efforts at community fisheries can be made more economically and socially viable are also addressed. We deal with the complex issue of social identity and the aspirations for creating a new sense of community. The new role of women, the importance of creating networks and closer collaboration with Cambodia's local governance structures and vibrant civil society organisations are also highlighted. The reforms have created new legal realms of local 'micro' ecosystem space and resource governance. But this should not detract from the need for an understanding of the larger 'global' context -- be it in relation to the ecosystem dynamics or governance priorities. We suggest that research and development priorities must be re-oriented to consider ways of dealing with the vast number of new and evolving 'local realities' and yet, link them up contemporaneously to the big 'global picture'. We end with a few recommendations addressed to different actors involved in the process of aquarian reforms. There is a call for a new mission and greater collaboration by research institutions; new methodologies for data collection; greater participation with local governance structures; an exit strategy for aid agencies and the need for setting up a national institute for co-management applications and training.

ISBN 99950 - 65 - 00 - 2



9 789995 1065003

ISBN 99950 - 65 - 01 - 0



9 789995 1065010



Department of Fisheries

Inland Fisheries Research and Development Institute (IFReDI)



For sustainable development of inland fisheries in Cambodia



POLICY PAPER

CAMBODIA'S AQUARIAN REFORMS: THE EMERGING CHALLENGES FOR POLICY AND RESEARCH



JOHN KURIEN
SO NAM
MAO SAM ONN

Made possible by:



ADB TA 4563-CAM
Capacity-Building of Inland Fisheries Research
and Development Institute (Phase 2)

CAMBODIA'S AQUARIAN REFORMS: THE EMERGING CHALLENGES FOR POLICY AND RESEARCH

John Kurien
So Nam
Mao Sam Onn

2006

Published by the Inland Fisheries Research and Development Institute (IFReDI) of the Department of Fisheries, Royal Government of Cambodia, 186 Norodom Blvd., Phnom Penh, Cambodia

Kurien, J, So, N. and Mao, S.O. 2006. Cambodia's Aquarian Reforms: The Emerging Challenges for Policy and Research. Inland Fisheries Research and Development Institute, Phnom Penh, Cambodia. 32 pp.

This policy paper was written as part of a Technical Assistance for the Capacity-building of the IFReDI, implemented by the WorldFish Center and supported by the Asian Development Bank (TA 4563-CAM).

This is not an official publication of the Asian Development Bank, and the views expressed herein should not be attributed to the ADB.

ISBN-10: 9950 - 65 - 00 - 2
978995065002

ISBN-13: 9950 - 65 - 01 - 0
978995065010

Front cover photos: John Kurien
Back cover photo: Zeb Hogan

About IFReDI

The Inland Fisheries Research and Development Institute (IFReDI) was established in October 2002 by virtue of Declaration No. 357 of the Ministry of Agriculture, Forestry and Fisheries as a research and development institute under the supervision of the Department of Fisheries (DoF).

Vision

Sustainable development of Cambodia's inland aquatic resources for the country's food, security, and economic prosperity.

Mission

To provide scientific information and technical support for the sustainable development and management of inland living aquatic resources in Cambodia, based on biological and socioeconomic research.

Goals

- . Scientific research collection, analysis and dissemination of biological and socioeconomic data;
- . Development and upgrading of national capacity for the rational management of inland fisheries;
- . Maximization of the income of fishermen and farmers;
- . Sustainable utilization of the fishery resources.



186 Norodom Blvd., Tonle Basak, Chamkar Morn, Phnom Penh, Cambodia,
PO Box 582, Tel/Fax: (855) 23 220 417
E-mail: info@ifredi.org Website: www.ifredi.org

CAMBODIA'S AQUARIAN REFORMS: THE EMERGING CHALLENGES FOR POLICY AND RESEARCH

John Kurien¹
So Nam²
Mao Sam Onn³

-
1. Professor, Center for Development Studies, Trivandrum, India
 2. Deputy-Chief, Fisheries Domain and Extension Division, Department of Fisheries, Phnom Penh, Cambodia
 3. Deputy-Chief, Administration and Personnel Division and Assistant of the DG, Department of Fisheries, Phnom Penh, Cambodia.

Contents

List of Tables, Figures, Boxes, Maps	iii
Abbreviations	iii
Acknowledgements	iv
Abstract	v
Introduction	1
1. Aquatic rhythms and resources	2
2. Aquatic reforms: Some history	3
3. Aquatic reforms: The emerging challenges	6
3.1. Establishing new access and use rights	6
3.2. Understanding system changes	9
3.3. Recognising the land and water interface	12
3.4. Assessing transitional changes	12
3.5. Creating viable fishing activity	13
3.6. Enlarging economic opportunities and the role of market	14
3.7. Defining identity, building community	15
3.8. Fostering networks	16
3.9. Redefining the role of women	17
3.10. Linkages with commune councils	17
3.11. Collaboration with civil society organisations	18
3.12. Reorienting research and development	18
4. Recommendations	20
4.1. Lead role for the IFReDI	21
4.2. New mission and cooperation between research and development institutions	21
4.3. Collaboration for new data and information requirements	21
4.4. Comparative analysis of organizational arrangements	22
4.5. Community fisheries and the Decentralization and Deconcentration strategy	22
4.6. Civil society organisations and aid agencies	22
4.7. Creation of a co-management applications and training institute	22
Conclusion	23
References	24

LIST OF TABLES, FIGURES, BOXES, MAPS

Tables

Table 1: The Changing Nature of Access and Use Rights in the Fishing Lot Areas of Cambodia	9
---	---

Figures

Figure 1: Inland Capture Fish Production in Cambodia	10
Figure 2: Criteria for Portraying the Locus of Identity of Riparian Communities in Cambodia	16

Boxes

Box 1: History of Fishing Lots in Cambodia's Fisheries	4
Box 2: Some Important Features of the Sub-decree on Community Fisheries Management (SDCFM) of the Royal Government of Cambodia	7

Map

Map 1: Map of Cambodia Showing Fishing Lot Areas Released for Community Fisheries	10
--	----

ABBREVIATIONS

CARDI - Cambodian Agricultural Research and Development Institute
CC- Commune Councils
CDRI - Cambodia Development Research Institute
CF - Community Fisheries
CFA - Community Fisheries Area
CFC - Community Fisheries Committee
CFDO - Community Fisheries Development Office
CRRI - Cambodia Rubber Research Institute
D&D - Decentralisation and Deconcentration
DoF - Department of Fisheries
EJF - Environmental Justice Foundation
FACT - Fisheries Action Coalition Team
FAO/UN - Food and Agriculture Organisation of the United Nations
FWSRI - Forest Wildlife Science Research Institute
GDP - Gross Domestic Product
IFReDI - Inland Fisheries Research and Development Institute
MAFF - Ministry of Agriculture, Forestry and Fisheries
NAHPIC - National Animal Health and Production Investigation Center
NGO - Non-Governmental Organisations
PFO - Provincial Fisheries Office
RGC - Royal Government of Cambodia
SDCFM - Sub-Decree on Community Fisheries Management
UNESCO - United Nations Economic Scientific and Cultural Organisation
UNTAC - United Nations Transitional Authority in Cambodia

Acknowledgements

This policy paper was written as part of a Technical Assistance for Capacity Building of the Inland Fisheries Research and Development Institute (IFReDI), Department of Fisheries, Kingdom of Cambodia, supported by the Asian Development Bank (TA-4563) and implemented by the WorldFish Center. We place on record the encouragement we have received from Srun Limsong, Director of IFReDI, Blake Ratner, Regional Director, (Greater Mekong) of the WorldFish Center, Renato Agbayani, Team Leader of the ADB TA-4563 and from Touch Seang Tana, Member of Economic, Social and Culture Observation Unit (OBSES) of the Council of Ministers (Secretary of State), Royal Government of Cambodia. We also wish to place on record our thanks to Blake Ratner, Renato Agbayani, Sten Sverdrup-Jensen, Chhuon Chamnan, Eng Cheasan, Ly Vuthy, Eric Baran and Clayton Hawkes for comments on the drafts. We also thank H.E. Nao Thuok, Director General of the Department of Fisheries, for devoting some of his precious time in reviewing this paper and for his encouragement and insightful comments. However we are responsible for any errors and omissions which remain.

Abstract

CAMBODIA'S AQUARIAN REFORMS: THE EMERGING CHALLENGES FOR POLICY AND RESEARCH

by

John Kurien, So Nam and Mao Sam Onn

The main objective of the document is to make a modest attempt to highlight the challenges which are emerging with the current phase of Cambodia's aquarian reforms -- the most important component of which is the current transition from fishing lots to community fisheries. The challenges include the realms of institutional and policy reform, local action, innovation and research. We contextualize our effort by commencing with an assessment of the importance of the aquatic resources and by providing a brief historical background to the reforms. This is followed by an examination of the changes in the access and property rights and the system changes which have been brought about as a result of the reform. How some of the transitional changes can be assessed and the manner in which the efforts at community fisheries can be made more economically and socially viable are also addressed. We deal with the complex issue of social identity and the aspirations for creating a new sense of community. The new role of women, the importance of creating networks and closer collaboration with Cambodia's local governance structures and vibrant civil society organisations are also highlighted. The reforms have created new legal realms of local 'micro' ecosystem space and resource governance. But this should not detract from the need for an understanding of the larger 'global' context -- be it in relation to the ecosystem dynamics or governance priorities. We suggest that research and development priorities must be re-oriented to consider ways of dealing with the vast number of new and evolving 'local realities' and yet, link them up contemporaneously to the big 'global picture'. We end with a few recommendations addressed to different actors involved in the process of aquarian reforms. There is a call for a new mission and greater collaboration by research institutions; new methodologies for data collection; greater participation with local governance structures; an exit strategy for aid agencies and the need for setting up a national institute for co-management applications and training.

Introduction

Developing countries have been recently challenged by many opportunities and problems pertaining to their efforts to facilitate economic growth and promote human development. Providing a growing population with the entitlements and capabilities needed to meet rising aspirations in a globalised, market dominated economy is often a daunting task before policy makers and politicians. Tapping into the renewable natural resources in a country -- its real wealth -- is often the 'fall back option' which both the state and the people adopt when crisis brews in the other sectors of the economy. The market-oriented option of converting natural resources to wealth often ends up in what economist Herman Daly (Daly, 2005) recently referred to as the 'tragedy of artificial or self-inflicted scarcity'. This approach generally leads to private riches for a few and exclusion from the public wealth for the many. Recognising the pitfalls of such an approach, but often under pressure from the people and civil society, states have increasingly resorted to measures to open up the terrain of renewable natural resources to communities who depend on them for a livelihood. Doing so without the appropriate institutional arrangements to modulate the use and management of these resources has often led to the 'tragedy of open access'. Finding the 'middle-path' -- wherein both efficiency and equity considerations can be adequately met within their social, cultural and political frameworks -- has been on the agenda of many developing countries.

Cambodia is pictured in international per capita income comparisons to be one of the poorest countries in the world. There is certainly much truth in this statistic. However, viewed from the perspective of per capita natural resource availability -- land, aquatic resources, particularly fish and its forests -- it is certainly one of the richest countries in Asia. Converting this latter statistical average into equitable access and well-being for the majority is indeed the greatest challenge before the state and the people of Cambodia. The challenges to achieve this goal with respect to the most valuable aquatic resource of the country -- the fish in its inland waters -- are the focus of this document.

We term the efforts at aquatic resource management which have been unfolding in Cambodia as aquarian reforms. We adopt the

term aquarian reforms rather than fishery reforms for a variety of reasons. The reforms have a historical context. In the past, government intervention in the sector was focused on gathering revenue rather than managing fish production or promoting local livelihoods. In the current phase the attention of the reforms is focused on the institutional changes which are being made -- contemporaneously by the state from above and the communities from below. These reforms are meant to empower people to relate collectively to the country's rivers, lakes, floodplains and the fishery resources therein. In the future the reforms should play a role in conditioning the technological choices and organisational decisions that people make in order to obtain sustainable gains from their collective action. In brief we are concerned with a dynamic process of transformation. The focus is not merely on fish but on the whole aquatic terrain and the evolving manner in which people relate and intervene in it. Our contention is that the ecological and socio-economic initial conditions have a definite bearing on these evolving circumstances. The present course and the future trajectory of the new institutional changes sought to be introduced need to be envisioned with this perspective. Aquarian reforms cover this entire canvass.

An excellent body of scholarship already exists about these reforms written before the sub-decree of community fisheries management was formally approved. Our efforts build upon that corpus of information and on recent (late 2005) discussions with fishery officials and researchers and field visits to several provinces for first hand information from the women and men in the villages most impacted by these reforms. The document primarily addresses the various actors associated with the aquarian reforms in Cambodia. It seeks to provide them with some guideposts on the range of issues that may arise if the reforms are to be taken to their logical conclusions.

The main objective of the document is to make a modest attempt to highlight the challenges which are emerging with the current phase of aquarian reforms. These include the realms of institutional and policy

We adopt the term aquarian reforms because we are concerned with a dynamic process of transformation. The focus is not merely on fish but on the whole aquatic terrain and the evolving manner in which people relate and intervene in it.

reform, local action, innovation and research. We contextualize our effort by commencing with an assessment of the importance of the aquatic resources and by providing a brief historical background to the reforms. This is followed by an examination of the changes in the access and property rights and the system changes which have been brought about as a result of the reform. How some of the transitional changes can be assessed and the manner in which the efforts at community fisheries can be made more economically and socially viable are also addressed. We deal with the complex issue of social identity and the aspirations for creating a new sense of community. The new role of women, the importance of creating networks and closer collaboration with Cambodia's local governance structures and vibrant civil society organisations are also highlighted. The reforms have created new legal realms of local 'micro' eco-system space and resource governance. But this should not detract from the need for an understanding of the larger 'global' context -- be it in relation to the eco-system dynamics or governance priorities. We suggest that research and development priorities must be re-oriented to consider ways of dealing with the vast number of new and evolving 'local realities' and yet, link them up contemporaneously to the big 'global picture'.

We end with a few recommendations addressed to different actors involved in the process of aquarian reforms. There is a call for a new mission and greater collaboration by research institutions; new methodologies for data collection; greater participation with local governance structures; an exit strategy for aid agencies and the need for setting up a national institute for co-management applications and training.

1. Aquatic Rhythms and Resources

Cambodia's vast aquatic milieu is part of the larger Mekong River Basin. It is certainly one of the most extraordinary ecosystems on earth. The floodplains of the Mekong spread over 70,000 km² and Cambodia accounts for the largest share. At the heart of this area is the Great Lake -- Tonle Sap -- the largest freshwater lake in South-East Asia and the most productive and biodiverse freshwater

zone in the world (Baran, 2005). The Tonle Sap River flows out from the lake and joins the Mekong at Phnom Penh. During the peak flooding season from June to September the seasonal monsoon causes the Mekong and its tributaries to spill out of their channels. The flooding is so heavy that the flow of Tonle Sap River is reversed back into the lake inundating huge areas of forest and grassland across the country. When this happens, the Tonle Sap -- now designated a UNESCO Biosphere Reserve -- grows from about 2500 km² to cover over 16,000 km² or about 7 percent of Cambodia's land area.

The Great Lake -- Tonle Sap -- the largest freshwater lake in is South-East Asia and the most productive and biodiverse freshwater zone in the world.

The floodplains cover a huge area of 40,000 km² or 22 percent of Cambodia's total land area. They include 22,000 km² of flooded forest area and 18,000 km² of wetland area (So Nam & Bouy Roitana, 2005). Dry-season refugia for fish are also important. The most notable being the deep pools of the Mekong (max. depth ~ 80 m) and its upstream tributaries. These waters and floodplains, created by this unique aquatic rhythm, provide about 4 million people who reside around it with a vast array of resources and ecosystem services (ADB, 2005). These include fish, aquatic plants, fertile lands for agriculture, fuel wood, breeding grounds for a host of aquatic fauna and a means of transportation, to mention but a few. The bas-reliefs at the Angkor temples provide evidence that this aquatic rhythm has yielded its limitless bounties to the Khmer people from very ancient times.

Cambodia's freshwater capture fisheries are among the largest and most significant in the world. The fishery is based on nearly 500 fish species which are caught using at least 150 types of fishing gear. The fish catch is conservatively estimated between 250,000 and 400,000 tons per year, worth some US\$ 300 million¹ and the catch of other aquatic animals such as shrimps, crabs, snails, frogs, insects, snakes and turtles is at least 60,000 tons per year (Hortle et al., 2004). The freshwater capture fisheries production contributes over 75 percent of the total fish production. Approximately four million people or 29

¹ The aquatic terrain is vast and dynamic. The living resources are highly diverse and much of it has only use value and remains 'invisible' in national and sectoral accounts. That it contributes to nutrition and well-being is beyond doubt. But a proper valuation of this is yet to be attempted.

percent of the country's population² derive employment from fisheries related activities, and fish and rice remain the nation's staple foods. Fish and other aquatic animals are crucial for nutrition and food security because they provide Cambodian people with over three-quarter of their total animal protein intake. It also contributes to much of their essential vitamins and minerals, particularly calcium and vitamin A, as well fat intake in their diets. Cambodians are considered one of

Approximately four million people or 29 percent of the country's population derive employment from fisheries related activities.

the highest per capita consumers of fish in the world. A recent estimate from household surveys placed it at 66 kg per person per year (Hortle et al., 2004). Fisheries contributed to between 8 and 12 percent of the country's GDP in the years 2000-2004.

It is this inherent natural wealth which singled out fisheries not only as a source of food and livelihood but as an easy means of earning revenues for the state coffers as well³. These rivers, lakes, floodplains, wetlands and forests have greatly shaped Cambodian national identity, food preferences and livelihood options. The local currency, the riel, is probably named after the most abundant fish species *trei riel* -- an indication of its traditional importance to the economy. The Khmer proverb "Where there is water there is fish. Take care of the water and the fish will take care of you" is a pithy statement encapsulating a large fund of traditional ecological knowledge (Kurien, 1998). It sums up what experts today consider the most fundamental management principle for any floodplain ecosystem -- management of water flow and maintenance of water quality (FAO, 1996, 1997).

2. Aquarian Reforms: Some History

While nature's rhythms in Cambodia have remained largely unchanged, the same cannot be said about its economic, socio-cultural and political milieu. This is particularly true of the last half century. One of the most important changes of this period has been the manner in which the state has altered the way

people relate to the natural resources of the country. The access to the aquatic terrain has been structured, re-fashioned and legally ordained over time. This process continues into the present and is likely to dominate the future as well.

At the center of organized efforts to control and manage inland fishing in Cambodia is the fishing lot. They have a long history (See Box 1). The fishing lots were the most organized sector of the fishery and provided a major source of revenue for the state. The fishing lots operated under a two-year state concession gained at a public auction which was not necessarily a transparent transaction. The Department of Fisheries (DoF) auctioned lots to individuals that had strong political connections. Auction fees were bid up to artificially high levels to bar outsiders, but only a fraction of this was actually ever paid (Degen et al, 2000). The bidder got exclusive rights over the specified fishing grounds in the floodplains. Every lot had a "burden book" (*cahier des charges*) which set forth the rights and obligations of parties to the concession. Specific details were given in the book of the area covered by the lot, the time of the open and closed season, the allowable types of fishing gear, the areas within the lot that were to be maintained as sanctuaries and the areas in which local communities would be allowed to access fish for subsistence. Fishing lots occupied about 10,000 km² of the most productive and hence the most lucrative fishing areas. The fish from the lots, harvested in large quantities, reached the whole population of the state and not just those who lived by the flood plains.

During the 1990s the freshwater fisheries in Cambodia were managed in ways that contributed little to poverty alleviation and with little regard for the environment. Much of the gains accrued to a small coterie of influential people. (Tarr 2002, Degen 2000). The spatial location of the lots, the presence of communities within their territory and the very productive nature of these systems made them breeding grounds not only for fish but also for social conflict. In the post-1990s the fishing lot owners normally sub-leased the lots to

² From personal communication with Mr. Nao Thuok, DG of the Department of Fisheries, Cambodia, Oct 2005.

³ According to the National Institute of Statistics of Cambodia the fishery (inland and marine) sector product (in current prices) was 1924 billion riel (US \$ 469 million) in 2004. This was an increase from 1515 billion riel (US \$ 398 million) in 2000. The fishery accounted for 31 percent of the GDP contribution of the primary sector in 2004. This was an increase from 29 percent in 2000.

quickly recoup their monies paid to the government. In any case lots were often too large to manage as a single unit. Given the huge investment made in the fish trapping systems, lots were also well protected against poachers by private guards with weapons. Some 80 percent of the entire dry season lakeshore of the Tonle Sap was under the control of 18 fishing lots (Evans, 2002)

Between 1995 and 1999 conflicts over fishing rights escalated in unprecedented manner and the manifestations took a variety of forms. This expression of dissent was possible

because the Constitution in force after the UNTAC administered elections in 1993 explicitly spelt out a range of civil and political rights that had been unknown in Cambodia in the past. The scope of civil society organisations in the fields of human rights, gender relations, development and environment increased dramatically. The international donor community also gave legitimacy to their activities seeking greater participation of people in development processes. Encouraged by the civil society organisations, fishing communities⁴ gained the confidence to speak out for their human rights and specifically against the injustices of

Box 1: History of Fishing Lots in Cambodia's Fisheries

The fishing lot system is said to have been initially introduced in the late nineteenth century (1863) as a feudal patronage system during the reign of King Norodom. The revenues collected were used to pay the French, who in turn kept the Siamese at bay. However, the system was given up 1884 due to a series of peasant rebellions protesting against the usurping of their aquatic commons. Bearing this in mind, the system was then modified and greatly formalized by the French Protectorate in 1908. They appointed trained staff, introduced strict management and conservation measures and ensured the inclusion of some social interests to take the concerns of the peasantry into account (Touch 2005). It is pertinent to note that these changes included the follow five elements: setting up the fishing season, creation of fish sanctuaries, restriction of certain types of fishing gear and equipment, protection of reasonable access rights for local villages (7 percent of total concession grounds) and the establishment of a fisheries research institute (Somony, 2002 quoting Touch 2001). The revenues from this more formalised management system were used till early 1950s to develop public infrastructure such as roads and railways for Cambodia (Touch , 2005). After independence in 1954 a legal framework to the fishery was provided by promulgating the Fishery Law of 1956.

In the early post-independence phase conflicts over the lot system resurfaced. The elite beneficiaries tried to gloss over the issues. They were initially successful. But King Norodom Sihanouk managed to have some of the fishing lots disbanded. In the 1960s there were often reports of lot owners and managers being killed in disputes with local officials and villagers (Tarr, 2002). It is likely that forces that eventually coalesced with the Khmer Rouge had a hand in these events. In 1973 Lon Nol banned all fishing lots and in 1975 most fishing activity too was abandoned after the Khmer Rouge seized power. They relocated people away from fishing villages and even attempted to convert wetlands into rice fields. Unlike the people -- particularly those of Vietnamese origin -- the fish in the Tonle Sap faced no threat from the Khmer Rouge. Stocks were at their peak during their rule (Tarr, 2002).

Fishing was revived again by the Soviet-supported socialist government of the People's Republic of Kampuchea established after the overthrow of the Khmer Rouge in 1979. In keeping with their ideological leanings they attempted to make the fishing lots most socialist in ownership by handing them to solidarity groups of fisher families also called "krom samaki nesat". The concession (tax) was to be paid in the form of fresh or salted fish to the state (Vibolrith, 2000). This was the phase after more than a century that people were relative free to fish where they wanted. Moreover there was an abundance of fish following the low pressure on stocks in the Khmer Rouge period (Degen et al 2000). It was during this phase that many people from Vietnam who were good fishermen entered Cambodia. Many of them settled in the Tonle Sap establishing floating villages as they had no access to land. By the mid-1980s with the Soviet Union in turmoil the government had to seek alternative sources of funds to run the country and keep their party cadres content. The fishing lots system was seen as an important source to achieve both ends.

In 1987 the Cambodian government promulgated the Fisheries Management and Administration Law no. 33 of 1987. This was largely modeled after the Fishery Law of 1956. The new law applied to both marine and inland fisheries and derived the concept of domain from the French legal concept of public domain -- inalienable state property. It further divided the inland capture fishery into three categories: Large scale fishing (basically the fishing lots that are auctioned and also called industrial fishing); middle-scale fishing (fishing gears such as dip nets, seine net etc which are licensed and also called enterprise fishing) and small-scale fishing (passive gear like single long lines, cast nets and small gill nets and also called family fishing).

The Sub-Decree on Community Fisheries Management proclaimed in 2005 put to question once again the continuance of the fishing lot system. However, if history is guide the issue is not yet a closed matter.

⁴ It is important to point out that rarely did the entire population relating to the fishing lot speak out against the violence. The ethnic Cham and the ethnic Vietnamese who were more involved in fishing activity were rarely caught up in the conflicts with authorities or lot owners (Degen and Thouk, 2000). Conflict was not over fishing rights alone. The operation of the fishing lot affected the freedom of activity of poor Khmer peasants who used the land and water for rice farming both during the wet and dry season (Tarr, 2002).

the authorities and the owners of the fishing lots (Ratner, 2004). Evidence of this was also reported regularly in the newspapers. Investigations by numerous civil society organisations highlight the pervasiveness of the issues:

"Conflict has been predicated on the competing claims on the fisheries resource that have arisen from commercial interests, a growing subsistence populace, illegal fishing and demands for agricultural land, water and fuelwood. Conflict has occurred between fishing lot employees, local authorities, military, police and local communities and has been visible as protests, petitions, 'fish-ins', arrests and detention for forced labour, confiscations of fishing gear and livestock (which have particularly harsh repercussions on the poorest fishers), injuries, serious human rights abuses, and reported killings of fishermen and fisheries officers" (FACT/EJF, 2002: 24).

In the midst of this scenario of conflict, it is pertinent to note that many discerning and very knowledgeable observers of the fishery scene in Cambodia argued that it was not the organisational and technological dimensions of the fishing lots which should be removed. They favoured a solution where:

"Improvements in the management of fisheries have to be addressed within and through this fishing lot system. Community-based management as usually envisioned may well be impractical in Cambodia. It is unrealistic to expect that community-based management structures that have been successful elsewhere can simply be replicated here..... The fishing lot system should be used as a starting point to address resource stewardship. The existence of common property areas within the fishing lot...could provide a potentially good platform for communication and negotiation on access rights and sustainable resource management" (Degen & Thouk, 1999).

The opposition to the fishing lot system on the one hand and support for its physical organisation on the other provided the opportunity for a third course of action. Several initiatives were taken by civil society organisations and international agencies like the FAO/UN to initiate efforts at fisheries co-management in several parts of Cambodia between 1994 and 1998 (Ly Vuthy, 2005). The

efforts were initiated by these agencies partly in response to the larger international movement towards community based resource management and highlighted as a meaningful way of utilizing and managing natural resources. The approach was favoured because it instilled greater local level responsibility -- a key to resource sustainability. However there was no concerted effort at that juncture to make this a nation-wide initiative.

It is against this background of social conflicts and competing ideas about solutions to fishery management that the current Prime Minister Hun Sen issued a proclamation in 1999 on what he termed 'anarchy in fisheries' (RGC, 1999). A year later, on 24th October 2000 at Siem Reap, while visiting flood victims in the province, he made his now famous announcement about the release of 8000 hectares of fishing lot area to local communities for community management. He also promised to remove corrupt officers who did not support the people's cause. At that juncture, there were 239 fishing lots covering over one million hectares and yielding a concession value to the government of about US \$ 2 million. Most of the lots released were the smaller ones with estimated individual values less than 30 million Riel (about US \$ 7,700 each) and therefore certainly not the most productive ones (Cacaud et al, 2003). However, there have been instances when more productive lots were also assigned to the communities.

A series of sub-decrees (*anukrets*) for each province were issued to formalize the release of fishing lots and setting up of community fisheries. For the rural population, particularly those around the Tonle Sap, the fact that these reforms were announced by the highest political leader was a matter of great significance. In February 2001 Cambodia became the first country in Asia to set up a separate Community Fisheries Development Office (CFDO) within the Department of Fisheries specifically meant to support communities and encourage them to undertake more participatory management of the floodplain fisheries in the country. The government also authorized the FAO/UN which was involved in community forestry in Siem Reap to assist in the formation of village fishery management committees around the Tonle Sap. These new village community initiatives worked closely with village chiefs,

district governors and Provincial Fishery Officers giving legitimacy to the community fisheries development process (Evans, 2002).

To give reform measures the necessary legal standing, a sub-decree on community fisheries was prepared that was publicly discussed in each province. The final draft was then formulated and passed on to the Ministry of Agriculture, Forestry and Fisheries (MAFF) for submission and approval by the Council of Ministers. Together with the sub-decree on community fisheries, the more important Fisheries Law, intended to replace the existing Fisheries Law of 1987 was also submitted to the parliament in early 2004. The new Fisheries Law will provide the legislative framework for the new management structure for community fisheries. A Royal Decree on the establishment of Community Fisheries was proclaimed and The Sub-Decree on Community Fisheries Management (SDCFM) was issued in June 2005. This legislation is the center-piece of the current aquarian reforms in Cambodia. (See Box 2)

3. Aquarian Reforms: The Emerging Challenges

In a natural resource reform process one important objective is to alter the nature of relationship between people and the resources with which they relate. The nature of access to the resource and the distributional and equity issues which this generates are the core of such reform policies. Changes effected in the manner in which people relate to resources in due course come to have an important bearing on the way people will relate to each other. New declarations of access and use rights to resources by one group of people are always conditioned by the manner in which others honour these claims. The transition to new forms of rights is always accompanied by fresh conflicts, new alliances, windows of opportunity and a variety of threats. In Cambodia's transition to community fisheries many of these possibilities are likely to emerge. There is a gap between the legalities of the reform and the more complex socio-economic and cultural compulsions of rural society in the country. Filling this calls for a variety of actions on numerous fronts. These are actions which must be taken by various arms of the state and by the community at various levels. The material outcomes of the changed natural resource management

regime will be strongly influenced by the forces of the market. They will have implications for resource conservation, the income distribution in society and consequently impact on the overall livelihood prospects and well-being of millions in the rural areas.

The challenges are numerous. Some may become evident in the immediate future and others may lie latent in the societal dynamics which will accompany the institutional reforms and surface at a later date. We have attempted to point to some of the more salient among them which we perceive at this critical juncture in the trajectory of aquarian reforms in Cambodia.

3.1 Establishing New Access and Use Rights

The recent aquarian reforms have resulted in the change from the fishing lots system to a community fisheries framework in about half the floodplain area in Cambodia. It has however not altered the basic property rights in the system. As mentioned in Article 4 of the draft Fisheries Law "fisheries domains shall be owned by the state". The reforms which have affected the fishing lots must be seen as measures, which converted large realms of state property under clearly defined private access and usufruct rights into realms that will be transformed into regulated community access and usufruct rights. (See Table 1)

The Fisheries Law is currently (December 2005) still under discussion at the National Assembly. For the Community Fisheries to get legal sanction, the details of the rules and guidelines, the model by-laws and management plans are currently being formulated by the Department of Fisheries. The SDCFM in the Khmer language is readily available with CF members. Given that literacy level in the community is low, efforts need to be made to create simple versions of the sub-decree highlighting its key elements. The use of visual and audio communication strategies to diffuse knowledge about the sub-decree is vital. It is essential that the rights, duties and roles of CF members be stressed as a matter of priority and technicalities of CF formation related to these attributes. Attention needs to be paid to ensure that these formation procedures are undertaken with commitment and transparency. The CDFO and the provincial level officers should assist in this process. The role of civil society organisations in performing a watchdog role cannot be minimized.

Box 2: Some Important Features of the Sub-decree on Community Fisheries Management (SDCFM) of the Royal Government of Cambodia

What are the Objectives of Community Fisheries?

Five objectives have been spelt out in the sub-decree: (a) to manage inland fisheries and related ecosystem where fishing lots have been cancelled (b) manage fisheries resources in sustainable and equitable manner (c) to increase understanding and recognition of benefits of fisheries resource through participation in protection and management (d) provide legal framework to establish community fisheries (e) improve standard of living and reduce poverty.

What composes a CF?

It is a group of Khmer citizens who live in or near the fishing area and voluntarily establish the initiative to achieve the objectives mentioned above.

Who can become a member of a CF?

Khmer citizen; either sex; must be resident in village of the CF area; be 18 years and can be member only in one community fishery.

What are the duties of a CF?

To participate in managing and conserving resources; respect instructions from DoF, MAFF; participate in establishment of conservation areas within CF area; guarantee equal rights in sustainable use of resource; implement bye-laws and formulate plan; enter into CF area agreement with DoF to manage resource; and keep all documents related to CF.

What are the rights of a CF?

The rights of CF are to organize fishing activity; cooperate with competent authorities to suppress violations; request to seize evidence of fisheries violation and detain offender then send them to competent fishery officer; in accordance will legal instruments can communicate with other CF or other persons and entities for benefit of CF; can fish, undertake aquaculture, sell, use and manage all fisheries resources in accordance with CF agreement and plan.

What are the limits on these rights?

The CF has no right to transact the CF area in any manner; will not erect any structure in CF area without permission of DoF, MAFF; will not partition or establish any private ownership in CF area; will not enter into any agreement in CF area with any person or entity not even for scientific research.

How is a CF Committee formed?

Each CF will be lead by a Community Fishery Committee (CFC) which is elected by secret, free and fair election by the congress by an absolute majority of those who voted. The person with highest vote is Chief of CF; person with second highest Vice-Chief. The fishery competent authority; the commune council shall be invited to observe the election. However results will be officially recognized even if they are absent. The number on the CFC will be 5, 7 or 11 depending on decision of congress. Women will be encouraged to be candidates. Khmer citizens who are members of the CF irrespective of sex have right to stand as candidates. The elected CFC has a term of 5 years and the right to lead and manage the CF in accordance with relevant article of the sub-decree.

What are the duties of the CFC?

The CFC has the following duties: draft by-laws and management plans and operate in accordance with them; seek technical and financial support; represent CF in mediation and conflict resolution; open bank account and manage finances in transparent manner; make decisions on CF in accordance with by-laws; participate in consultations; report violations; conserve resources and CF area; perform other functions as instructed by fisheries competent authority; appeal if agreement for CF not renewed. Only the CFC has authority to apply to DoF to request approval of CF area agreement. The CFC may request technical assistance from fishery officials or individuals to draft CF area agreement.

How is the Community Fishing Area Agreement Prepared?

The procedure for preparation of CF Area Agreement shall be determined by MAFF. It will have a scale map (1/50,000); list of members and committee members; by-laws and regulations; statement on objectives of the CF. Draft of CF area agreement shall be announced exhibited for 30 days in prominent public places (commune/sangkat district/khan) and government offices and submitted to DoF for review and approval. If there is any objection to the notification during this period the commune/sangkat council or district/khan or provincial/municipal authorities shall assist to resolve conflict or revise agreement. The CF Area Agreement has validity for not more than 3 years from date of approval by DoF. The CF Committee shall submit written request for extension of agreement six months before expiry and this new agreement will be for not more than a period of three additional years. Requests for renewal shall be approved by DoF in 30 days of expiry of CF area agreement. If DoF is terminating the CF Area Agreement, they shall send a report based on an evaluation by respective authorities and with participation of the CF Committee to explain reasons for doing so. If the DoF does not provide notification on the request for renewal in 30 days the CF Area Agreement will deem to be automatically renewed.

Can the CF Area Agreement be cancelled?

The CF Area Agreement can be cancelled before expiry of the term for any one of the following reasons: a written agreement among all for cancellation; agreement among CF Committee and two-thirds of members; due to the failure to implement and due to violations of the current CF Area Agreement which harm the resource; due to the judgment of the Royal Government that the area can be put to other higher public and social benefit. In the case of this last reason the DoF shall give written notice to the CF Committee six months prior to termination giving reasons for doing so. During this period the DoF will discuss with the CF Committee about the matter and the losses arising from such action to the community.

How is a Community Fishing Area Management Plan Prepared?

After approval of the CF Area Agreement the CF Committee can prepare a management plan and request for technical assistance from competent fisheries authority to do so. The procedures for the preparation of the plan shall be determined by proclamation of the Minister of MAFF. This plan shall be submitted to the DoF through the proper channels. The period of validity of the management plan will be the same as that of the validity of the CF Area Agreement. The plan shall be reviewed by the provincial/ district Fisheries office every year and report to DoF. The follow-up, monitoring and evaluation of the implementation of the plan shall be done with participation of CF Committee representatives. The DoF may require the plan to be revised in compliance with other legal instruments related to the fisheries sector to ensure sustainability of the fishing area.

Where Can CF get Finances?

The CF will derive finances from: contributions of members; donations; assistance from Royal Government, international organizations and NGOs; and other lawful income.

The ground swell of enthusiasm among riparian communities at their new access and usufruct rights and the freedom to relate to the aquatic resources conferred by this, has been remarkable.

The ground swell of enthusiasm among riparian communities at their new access and usufruct rights and the freedom⁵ to relate to the aquatic resources conferred by this, has been remarkable.

It will be wishful thinking to imagine that once legal status is attained the new rights to communities will be respected by all sections of society. Control over resources brings changes in income and wealth distribution in communities. New alliances are formed. Old loyalties are ruptured. These are the basis for new social tensions. Being attuned to these possibilities, providing pre-emptive awareness and building the capacity for conflict resolution at the local level will be a major task before state governance structures. Civil society organisations that have played a crucial role in the formation of CFs may also need to attune their critical support for such eventualities.

able. The large number of such de facto CF units organised and their spatial spread across the aquatic terrain is impressive (See Map 1). Community fisheries have become a *fait accompli* in Cambodia.

The *de facto* changes in access and use rights between 2000 and 2005 have been hugely supported by the organisational re-orientation within the DoF with political commitment at the highest levels. The backing of civil society and the commitment of international organisations such as the FAO/UN to the process of transition from the very early stages have also been important in keeping the tempo of the new claims to the aquatic terrain at high ebb. However, the new claims have no *de jure* basis until the new Fisheries Law is passed by the parliament.

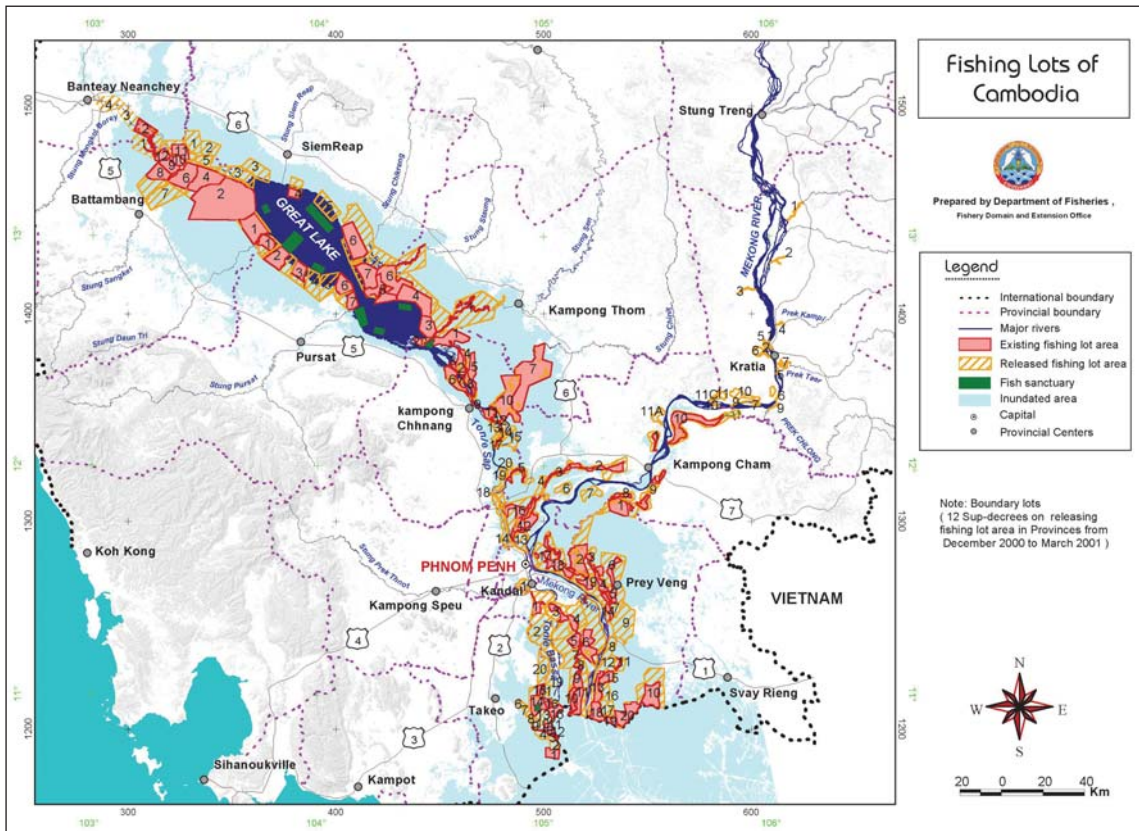
3.2 Understanding System Changes

While regulated community access and usufruct rights are undoubtedly the major institutional changes brought about by the reforms, it has also induced other systemic changes which need to be carefully examined. These include changes in: (1) the scale of production, (2) the nature of technology choices (3) the likely changes in the hydraulics of the system which will modulate the land-water interfaces of the flood plains and (4) overall

Table 1: The Changing Nature of Access and Use Rights In the Fishing Lot Areas of Cambodia

Time Periods	Nature of Access and Property Rights
Pre-October 2000 <i>(Before the current reform announcement by the Prime Miminister)</i>	State property under private access and usufruct rights
October 2000 to May 2005 <i>(After the PM's announcement and before the passing of the sub-decree on community fisheries)</i>	State property degenerated initially into an open access realm (free-for all with only possession rights)
May 2005 onwards <i>(After the passage of the sub-decree on community fisheries management [SDCFM])</i>	State property under regulated community access and usufruct rights. The community fishery area is a territorial use right in Fisheries (TURF) (Article 6 of SDCFM). However, for social reasons, access rights are granted to non-community members also (Article 14 fo SDCFM)

⁵ In our field visits we became acutely aware that one of the most important 'intangible' benefits of moving to community fisheries was the freedom (*khmer: sereyphiep*) to relate to the aquatic resources without fear of reprisals from fishing lot owners.



Map 1: Map of Cambodia Showing Fishing Lot Area Released for Community Fisheries

ecosystem changes due to uncoordinated multiple uses. Along with the institutional change, these factors will play a significant role in determining the level of inland fish harvesting and also in reshaping the activities of fish processing and marketing in Cambodia. It will also condition the other uses to which communities will put their newly obtained community fishery areas. It will have far reaching implications and an important bearing on issues of access and equity.

According to available fisheries statistics, the total production from large scale fishing, including all the fishing lots, accounted for only about 10 percent of the inland fish harvest of Cambodia. Family fishing (largely gill nets and cast nets and small traps) is estimated to have accounted for about 40 percent of the fish captured⁶. The recent aquarian reforms have resulted in half the area of the original lots being converted into community fishery areas. Only family scale fishing is per-

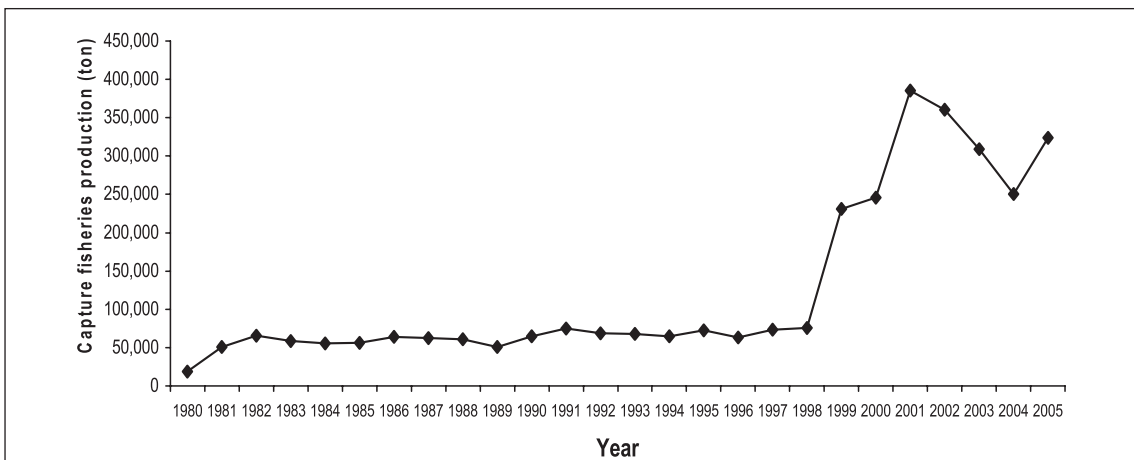


Figure 1: Inland Fish Production in Cambodia

⁶ There are a wide range of estimates of inland fish production. This is partly due to the wide variety of fishery realms and gear types involved. The estimates vary from 280,000 to 431,000 tonnes. (FAO, 2005)

mitted in these new community fishery areas. In these circumstances, if all other factors remained the same, we should not expect to see a major change in fish production as a result of this institutional change alone. However, data from the Department of Fisheries for the years 2000-2004 exhibit a steep rise in fish harvests between 2000 and 2001 and thereafter a fall back to the 2000 level by 2004 (See Figure 1). Surprisingly, the DoF official figure shows a rise in fish catch in 2005. This implies that after the announcement of the institutional change to CF, other factors in the system did not remain the same.

(i) Scale

The institutional change has resulted in a change in the scale of production. More small-scale activity has increased the fishing effort that has been applied to the water bodies in the post-reform period and this naturally affects fishing mortality in general. If only legally permitted family fishing gear has been used, even with increased effort, there is no reason to expect any harm to the ecosystem. But the catch per fisher is bound to have decreased. This can be perceived by fishers at the local level as resource depletion. Such opinions should be judiciously evaluated particularly against the background of the kind of fishing gears utilized.

(ii) Technology

There were reports of increased use of harmful fishing technology in the newly released areas. This was particularly evident in the period 2001 and 2005 when no clear *de jure* provisions were in place to guide community fishing initiatives. Recent field visits in Kampong Chhnang and Battambang also confirm that fishing in the designated community fisheries areas continue to be plagued by 'illegal fishing' -- which must be defined as including not only fishing with harmful technologies but also fishing with legally permitted gear but in prohibited areas.

More legally permitted family scale fishing implies more nets, traps and canoes. The demand for the materials for fabrication of gear and craft has increased. The wood for dugout canoes was in short supply. The trunks

of large palmyra trees were traditionally used in many places, but these could soon be in short supply⁷. Demand for alternative boat building materials may soon surface. The same can be the case with materials for nets. These are realms where the attention of technologists and extension services will be much sought after. While harmful technologies will need to be checked, it may be worth examining the scope for reviving and promoting both old and new technologies which will contribute to raising the share of family based fishing in the total inland fisheries output. Assessing the new material demands and/or employment generation implications of such actions will also need to be undertaken.

(iii) Hydraulics

The impact of the institutional changes on the hydro-dynamics of the inland river and flood plain systems in Cambodia will need careful observation. Though the macro impact of the changes may take more time to assess, the impacts at the local level would be more obvious. For example, since the fishing lot structures were removed in half the previously occupied areas, the outflow of water in the fishing season (after October) would have been faster⁸. This would have exposed both the recession pools on the flood plains to fishing and also made available flooded forest lands in the floodplains to agriculture much earlier in time. On the other hand the quicker outflow of water may have had adverse impacts on irrigation for rice farming. In Bak Emrek CF in Battambang Province, the members pointed to the higher fishery productivity of the river adjacent to the CF area. They attributed this to the decision of the CF members to remove all the obstructions in the flood plain channels which were put up by the former lot owners. Consequently more fish fry entered the river. As a result more women and children are able to catch fish for consumption and processing very close to their homes along the river bank. The river was not part of the CF area and was an open access realm. This was a positive externality of the shift to the CF regime arising from changes in the micro (local) hydro-dynamics. There are likely to be a vast variety of such alterations causing both positive and negative impacts.

⁷ It is illegal to cut palmyra trees. However we have made field observations that this is being openly done pointing to the need for alternative boat building material.

⁸ The reference here is to the opening and freeing of lateral barriers (barrage fences, barrier gears, sluice gates, channels etc) between riverine and lacustrine bodies and the floodplains where agriculture can be practiced. It is likely that these changes in the hydro-dynamics are more evident at the regions closer to the deltas.

(iv) *Ecosystem*

The changes in scale, technology and hydraulics will inevitably have a bearing on the ecosystem. The changes in fish biology and migration patterns will need to be studied. How critical fish habitats, fish sanctuaries, floodplains, flooded forest and deep pools have been impacted will facilitate greater understanding of the biodiversity changes. Because of the dispersed nature of the CFs, changes to the ecosystem may be incremental in nature and can go unnoticed in the early stages. However, such 'creeping changes' may aggregate to a threshold level beyond which ecosystem recovery can be more difficult and time consuming. This may then take a heavy toll on the ecology and the economy. Taking careful note of reported perturbations at the local-level will help to ascertain whether the institutional changes can create species changes which may have adverse long-term impacts⁹. The structured participation of the fishers in all these assessments will not only result in obtaining good information, it can also contribute greatly to their awareness and understanding of the ecosystem now under their control.

3.3 Recognising the Land and Water Interface

There is one important dimension which is not adequately reflected in the SDCFM. This is the fact that the of the Community Fishery Area (CFA), is more often than not a land-water interface and the members living in the villages (*phum*) are normally comprised of those with varying levels of interest in the natural resource potential of both land and water. This can create intra-member conflict because the nature and utilisation of the land of a floodplain can conflict sharply with the nature and utilisation of its water. These conflicts can happen at any particular juncture in time and also over a season of use.

Perceptions of benefits or costs of the change from the fishing lot system regime to the community fisheries regime will depend in large measure on people's multiple use of resources. For example a CF member who has some land and was seasonally involved in

fishing activity may consider the current unhindered access to the water in the floodplain under the CF regime a great boon to his income. On the other hand another member who was landless and exclusively dependent on fishing would consider the change to CF negative because of the increased competition for the fishery resources by others who were earlier restricted by the fishing lot system. There are a range of combinations of these characteristics in a new CF area which will make any generalization about the impact of the current aquarian reforms on people difficult to make.

An additional complication to assessing benefits and costs of the aquarian reforms derive from the fact that the floodplains have traditionally been considered by all as an open access realm of last resort. Consequently, the conditions and opportunities in agriculture will always influence the extent of access, as well as the amount and nature of effort which will be applied to the fishery of the floodplains. As a matter of fact, the SDCFM does not envisage members to be involved in agriculture in the CFA. However, members on their own are not likely to make such distinctions. There will be a minority of CFAs where the activity of members will be almost exclusively fishery oriented. These will probably be largely restricted to the CFAs in Tonle Sap. The possibility of such a transition in other regions of the country, even where it is feasible, viable and desirable will be restricted by the very provisions of the SDCFM. How can this anomaly between the reality of the ecosystem and the legal compulsions of the SDCFM be reconciled? An important challenge is to develop a holistic understanding of the way people perceive their ecosystem. This will also help us fathom how they may evolve as a community.¹⁰

3.4 Assessing Transitional Changes

There has been considerable debate over the trends in fish production following the transition to CF. It has been argued that the increase in fishing effort (more nets and boats) and the use of illegal methods (e.g. small mesh size nets, electrocuting of fish) has resulted in a decline in fish production.

⁹ There is evidence that prior to the change to CF there have been significant species changes. Cyprinids now make up more than 40 percent of the total catch of the Tonle Sap system, and populations of large migratory catfish and carps have declined. Anecdotal evidence indicates that migratory and larger species--once much more abundant--have declined as a result of fishing pressure (Allan et al, 2005)

¹⁰ Keskinen M, 2003 provides an elaborate description of several of the dimensions raised in this section.

Methodologies for data collection of fish harvests have been generally faulty. Assessing these changes by surveying the fishers themselves may also not yield credible answers. A better judgment on these issues is obtained by observing the pre-harvest (gear and craft making) and post-harvest activities (processing and trade).

For example, if we can assess the changes in the quantum and nature of fishing net fabrication we will be able to arrive at more conclusive answers about trends in fishing effort and the illegal specifications used, if any. This will, for example, also indicate if increase in fishing effort has resulted in enhanced employment for women and men in net making activity. While the employment generation may be seen to be a positive and desirable feature, the impact of more nets on the resource need not be so. The cutting of aged palm trees for the construction of new dugout canoes may also point to signs of more fishing activity. Similarly the issue of the increase in illegal electric fishing is best assessed in the establishments which sell and charge the car batteries used for this purpose.

Investigating the possible changes in the scale and nature of fish production is best assessed by observing those who are involved in post-harvest activity such as fish processors and traders. They would be the first to perceive changes in the nature and quantum of harvest because it will have a bearing on the quality and the cost of their operations. If the small traders, rural markets and households close to CFs report greater availability of fish (species, size, quantity) this is a sign of more decentralized and smaller scale of harvest. Assessment of the business activity of traders who used to transport large quantities of fish from fishing lot harvests will also indicate the losses they incur as a result of the change in the scale of harvest -- from the centralized and large scale landing of the fishing lots to decentralized and small scale landings of the CFs. There may also be changes in the species composition of the catch -- for example a reduction in species such as trey riel which is usually netted only in the larger-scale fishing gear. Reduced activity of the larger traders may also imply that fish

supply to consumers located in the distant hinterland may have declined. Whether this has had adverse impact on their consumption levels of fish would need to be investigated¹¹.

Not all the changes assessed and reported should be attributed to the institutional change brought about by the current aquarian reforms. Some of the changes may be the result of the larger ecosystem changes in the total catchment area of the Mekong and the conditions such as rainfall changes and related drought conditions affecting agriculture production and farmers fortunes. There are vast new realms of socio-economic research to be undertaken here.

3.5 Creating Viable Fishing Activity

The SDCFM permits members to fish only at family-scale in accordance with the law (Article 13). However, the tax on middle-scale fishing has been withdrawn by another government order. It would therefore imply that persons who have been using middle-scale gear will have to give it up if they wish to become members of the CF. This is an unrealistic expectation given the significant productivity differences between small-scale and middle-scale fishing. The estimates (made in 1995-96) of the annual fish catch by households using middle-scale fishing gears was put at about 3300 kgs/annum compared to 640 kg/annum for the household using small-scale fishing gear (Ahmed et al, 1998). While the annual catch figures may have changed over the decade - the order of difference (the ratio 5:1) between the productive capacities of the two types of gears is unlikely to have changed. Asking households using middle-scale fishing gear to give it up as a condition to join a CF is clearly unrealistic. The implication of this is that households in a given CF area who use middle-scale fishing gear will not be able to become members of the CF. If they wish to continue fishing, they may be forced to do so illegally!

Given that the socio-economic differences between households involved in small-scale fishing and those involved in middle-scale fishing are unlikely to be very significant, restricting the access of the latter to the CF

¹¹ The shift from the fishing lot system to CF will create changes in the spread and scale of the traditional barter transactions of rice for fish between upland farmers and Tonle Sap fishers. This can signify far reaching changes in people's accessibility to culturally conditioned sources of protein (prahok) and the attendant consequences of this on nutritional status.

area can have adverse implications for their livelihood. It also generates new conflict possibilities within the village and between fishers.

Resolving this dilemma will be a challenge. It would imply either allowing middle-scale fishing gear to be used in the CF or broadening the definition of family-scale fishing to include much of the licensed middle scale fishing gear into its purview. This would be a major step in creating viable fishing activity and an important policy measure to enhance equitable and sustainable inland fish production under the institutional arrangement of CFs.

3.6 Enlarging Economic Opportunities and the Role of Market

If the true objective of the CF is to improve the standard of living (Article 2) of the members, then they must gradually expand the range of activities undertaken to include more than just harvesting of fish for subsistence consumption. Integrating a dimension of enterprise development is vital for this to happen. This implies that for the aquarian reforms to be completed successfully and taken to their logical conclusion, the full range of activities spelt out in Article 11 of the SDCFM - "fish, do aquaculture, harvest, sell, use and manage all fisheries resources in accordance with the community fishing area agreement and management plan" must materialize sooner or later. Undertaking some of these activities will require new organizational structures - for example arrangements to process and market the fish harvested by the members -- which are not currently specifically envisaged in the SDCFM. However, it may be possible to incorporate these activities into the community fishing area management plan (Article 28). The Community Fisheries Development Office (CFDO) at the DoF should take measures to anticipate and plan ahead for the possibility for such

If the true objective of the CF is to improve the standard of living of the members, then they must gradually expand the range of activities undertaken to include more than just harvesting of fish for subsistence consumption.

initiatives in the more successful CF's.¹² Studies should be commissioned and pilot demonstrations should be undertaken to examine the viability of decentralized pre-and post-harvest processing and marketing activities. The scope of small-scale aquaculture on a seasonal and perennial basis may need to be assessed. The various ways in which small-scale agriculture and fisheries can be integrated without intractable ecosystem, social or economic conflicts can be a realm for more concerted research (Srun Lim Song et al, 2004). Experiences in the Mekong region may serve to provide good models of the technological possibilities but they may need to be tuned to the new institutional realities in Cambodia.

The scope for getting greater non-use values from the aquatic resources -- getting people (tourists) to watch the fish and the water rather than catch the fish -- can be explored in some of the CFs in the Tonle Sap. Where the possibilities for recreational fisheries can generate incomes for the CFs the modalities regarding the fishing spots, the season and timings, the catch limitations and the user charges should be worked out.

In the context of the international development assistance credit which has been taken by the government for pushing the aquarian reform agenda forward, the challenge to expand economic opportunities and generate greater social wealth in the community is a crucial national consideration¹³.

Creating viable fishing activity and expanding economic opportunities will result in communities having far greater interactions with the market than in the past. Most of the beneficiaries of CF have in the past been largely confined to a subsistence economy with limited interactions with the market. The greater access to aquatic resources for larger numbers of people results in more interaction with the market for these new beneficiaries. Compared to other food commodities, fishery resources are innately more oriented to market transactions because

¹² The potential for off-farm and non-farm activities in Cambodia has been cited to have strong potential for remunerative job creation (Acharya, 2003)

¹³ If the loans taken from the Asian Development Bank and other institutions are not to become a crippling liability for the future generation it is crucial for these reforms to generate socially desirable economic surpluses and not merely keep people at subsistence levels through family fishing.

of the limit to its subsistence consumption and its greater perishability. Along with the market for the products, access to the aquatic resources also generates greater interactions with the market for inputs (craft and gear etc) and the market for credit (loans to buy equipment). Sometimes there can be an interlocking of these markets which can be detrimental to producers and lead to their exploitation. For example, if the market for credit is linked to the market for outputs, it may lead to producers obtaining low prices for the fish which they wish to sell. As the scope of economic activities of the CFs expands, the penetration of the market into the lives of the beneficiaries will

Approximately four million people or 29 percent of the country's population derive employment from fisheries related activities.

increase. The challenge is to make markets fair and people-friendly. This can be achieved only through community and state collaboration. Collective action bolstered by legislative

support is the key.

3.7 Defining Identity, Building Community

How does one define the emerging riparian community? Do members of the newly created CF view themselves as fishers who farm or farmers who fish? Is their primary identity that of place, economic status, economic activity or ethnicity?

The recent history of Cambodia was marked by serious civil strife and genocide. In the Khmer Rouge phase, this was accompanied by an uprooting of rural people from their home villages and the effacing of traditional institutions like the pagodas which gave the people the sense of place, identity and community. The liberation of the country from the Khmer Rouge by Vietnam was not without its mixed feelings, particularly with regard to the strong negative sentiments of the Khmer about their liberators.

Can Cambodian villages be described as a single closed entity or communal community? (Guiseppe, 2000). Though Khmer society seems to be traditionally an individualistic society (each family an island), we can locate several small independent groupings within a

village based on kinship and friendship (Best, 2005). The pagoda or wat may also have been, and continue to be, the most important unifying force in most communities (Pellini, 2004). Much has also been said about the patron-client relationships which define the rural communities (Blunt & Turner, 2005). However, studies conducted in the late 1990s describe the lack of any larger or new groupings such as fisher associations, clubs or cooperatives which are formed on non-kin principles (FACT/EJF, 2002:29).

The extent to which people wish to be identified as 'fishers' or 'farmers' is also a matter which needs to be investigated. The basis on which such occupational identities are revealed is a matter to be considered. The strong Buddhist sentiment against activity which takes life (fishing is one such) may influence people's perceptions/responses on how they wish to reveal their occupational identities when faced with the dichotomy of choice between being labeled farmer or fisher. The association of particular ethnicity with certain occupations may also condition their choices. The glorification by the Khmer Rouge of rice agriculture against all-else can also be another factor weighing in people's minds when asked their occupation¹⁴.

The SDCFM is not mired by these subtleties. The SDCFM defines a community to be a small group of Khmer citizens in the area who voluntarily establish and take initiative to improve their own living standards by using and processing fisheries resources sustainably (Article 6). This would imply that unless all the persons in the village join the CF, there will be two groups: members and non-members. However this division does not give any extra privilege to the member over the non-member. In relation to access to the fishery resources no one can be excluded (Article 14). We have attempted to portray the locus of identity of a person in a riparian community on the basis of three criteria: (1) ethnicity (2) economic status and (3) economic activity. (See Figure 2)

An important question will be whether the members who first voluntarily agree to form the CF represent the larger interest of the village from an activity, economic status or

¹⁴ This issue has been raised by Acker, 2003 when he asked "Is Cambodia a nation of fishermen that -- incidentally grow rice, or of rice producers that also catch fish?" While a firm answer to this may be difficult to offer, people can tell you how they divide their time between the activity of fishing and farming.

Do the members who first voluntarily agree to form the CF represent the larger interest of the village from an activity, economic status or ethnic perspective? The nature and composition of this initial grouping can be a major factor in defining the identity of the members and the sense of 'community' in a new CF.

ethnic perspective? The nature and composition of this initial grouping can be a major factor in defining the identity of the members and the sense of 'community' in a new CF. Careful study of the composition and identity of the households in a potential CF area should merit priority. Elements of success or failure of a CF may be inherent in these

'initial conditions' of identity and membership structure.

The creation of CFs in this amorphous context can create new ruptures. But they also hold the potential of giving a new locus for a sense of identity and can be the foundation for building a new rural riparian community in Cambodia. The social engineering implicit in the process of formation of new CFs attains

great significance and is a major sociological challenge.

3.8 Fostering Networks

Networked and nested institutional arrangements are an essential institutional innovation for successful natural resource management. The levels at which access and use of the resource are pegged must ideally match the administrative and eco-system levels. As time moves on and the creation and functioning of CFs spread, there will also emerge compulsions for greater coordination of the activities of contiguous CFs. This may be needed to minimize the negative reciprocal externalities and also take advantage of economies of scale at a later date. Though the provision for such collective action is not envisaged in the SDCFM, it is specifically mentioned in the Royal Decree on the Establishment of Community Fisheries (Article 3) saying "community fisheries whose fishing areas are adjacent to each other can participate with each

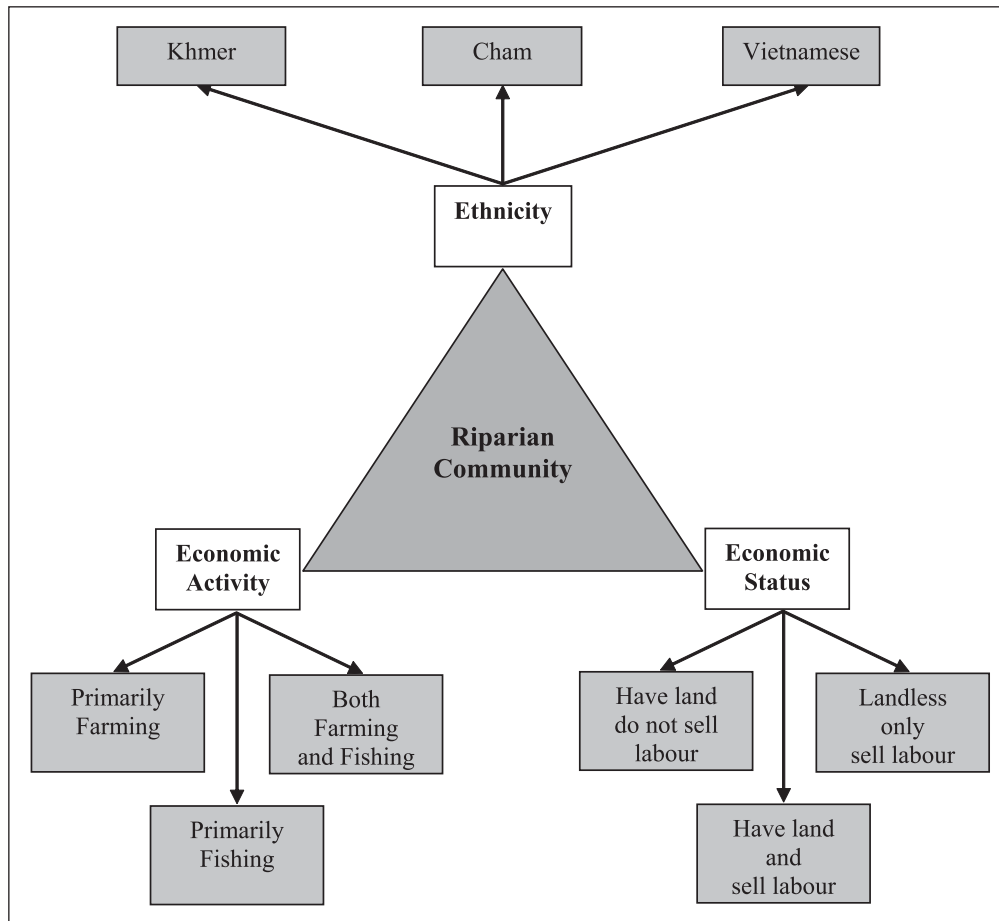


Figure 2: Criteria for Portraying the Locus of Identity of Riparian Communities in Cambodia.

other by establishing federations of community fisheries." Such provisions also help to increase community reciprocity and build trust across smaller community units. Often it is this social capital which becomes the deciding factor in the success or failure of community action¹⁵.

3.9 Redefining the Role of Women

Women have traditionally played four important roles in riparian communities: finding food for the family (including gathering aquatic flora and fauna in the dry season when men migrate to find work); processing fish; selling fish and supporting the husband in fishing and related activities like mending nets etc. With the coming of CF their roles in all these activities are bound to expand. Making this expansion of activity also qualitatively different and more rewarding is a challenge. The possibilities for collective women's enterprises should be closely examined. Linking savings and credit schemes to the expanding pre- and post-fishing activities can create a major impetus for ensuring that the gains from enhanced family fishing in the CF's are translated into greater livelihood entitlements and capabilities. When women have greater control of the household financial resources there are greater possibilities that these resources will be invested more wisely in matters pertaining to food security, education and health of the family. One of the visible changes following the current aquarian reforms is the structured as well as the natural increases in the role of women in the CF committee activities. A few women are involved in the CF committees. In early-2005, Siem Reap CFs had the largest committees (27 people) with the most women (4). Other provincial CF committees had 6 to 10

The role of women officers of the Provincial Fishery Offices, the involvement of the Commune Councils and civil society organisations should be ensured to increase women's activities and further empower their involvements in the governance of the CFs.

members with about 1 woman per committee.¹⁶ Some women play significant roles as secretaries and accountants as well as in the patrolling activities. The role of women officers of

the Provincial Fishery Offices, the involvement of the Commune Councils and civil society organisations should be ensured to increase women's activities and further empower their involvements in the governance of the CFs.

3.10 Linkages with Commune Councils

Decentralized governance has received a big boost in Cambodia partly due to donor pressure and partly as fallout of astute political strategy (Blunt & Turner, 2005). The Commune Councils (CC) are the legal entities of local governance at the level of the larger community. For greater organizational sustainability and legitimacy CF's should operate within the realm of the CC. There is already good evidence to show that when CF committee members are also involved with the CC there is greater enthusiasm and activity in the CF (Marschke, 2003 and FACT, 2005). Probably this is because of the greater legitimacy which the CF acquires when it is anchored into a larger and more administratively and politically configured authority structure. Decentralised commune governance holds promise of institutionalized local participation and may propagate a culture of increased and demand-driven accountability. Moreover being under the umbrella of the CC provides for greater coordination of activities if there is more than one CF within the area of a CC. However, much will depend on the manner in which CF Area boundaries are legally fixed in future.

Currently in the SDCFM there is a mandatory provision (Article 6) for the CC to cooperate in the formation of the CF. There is also the provision (Article 15) that the CC shall be invited to the election process of the CF committee. These provisions in themselves do not create the clear organizational compulsion for the CF to operate under the overall guidance of the CC. There is need for more proactive measures to be taken on this count.

There are two possible approaches to achieve this. The first is to create appropriate legislation to facilitate this such as a ministerial decision (*prakas*) of the MAFF and Mol (Oberndorf, 2004). The second is let matters

¹⁵ In field visits we observed such steps already being taken by communities in Kampong Tralach in Kampong Chhnang Province. Such measures, aided by the Provincial Fishery Officers not only reduced illegal fishing, it also generated greater confidence among the CF Committees in their ability to organise over larger geographic space.

¹⁶ DoF baseline survey conducted in each Project Implementation Unit, funded by TSEMP in late 2004 to early 2005.

evolve within context-specific circumstances till a threshold of experience of such collaboration results in pressure from below to create this linkage. Thus far in Cambodia, the whole aquarian reform process has been a combination of the two. There is no reason to alter this process.

3.11 Collaboration with Civil Society Organisations

The role of civil society organisations in the formation of CFs has been widely acknowledged. The people in the CFs also perceive the benefits - material and non-material - of civil society participation. However, as in any state-driven initiative - a feature of most Asian countries - the role of civil society organisations is looked upon with a certain degree of circumspection. The reality in Cambodia is a bit different. Given the condition in which the country and people found themselves in the early 1990s, non-governmental assistance has been a major source of assistance to revive life and livelihood in the country. The flexibility, motivation, good intentions and their access to funds are the main highlights of civil society organisations. However, they may not necessarily bring with them any special competence or knowledge about the specific sector with which they are working. To overcome this shortcoming they have obtained the services of international or domestic consultants to advise them on the appropriate measures to be taken.

The role of existing traditional village organisations also needs to be explored. The pagoda committees and the physical space of the pagoda provide the only enduring community structure in rural Cambodia today. Most CF gatherings are undertaken in the precincts of the village pagoda. A systematic exploration of the beneficial links between CF and the pagoda committees is a realm for deeper investigation (Pellini, 2004).

With respect to the future challenges in the inland fisheries sector in Cambodia, and in particular with relation to the spread and the legal formalization of CF, some streamlining of the actions of civil society organisations may be of benefit to the DoF, the communities intending to organize CF and for the civil society organisations themselves. The establishment of the Technical Working Group on Fisheries (Department of Fisheries, 2005) which is to act as an interface and a partner-

ship between DoF, the donor community and the civil society organisations is a step in the right direction. However at a more practical level it would be important for civil society organisations to collaborate with the Provincial Fisheries Offices (PFO) in their relation to CF. There is a great need for a two-way knowledge gaining process at this level. The organisations need far greater knowledge on the specifics of the inland fisheries (the ecological, social, economic, technological and institutional aspects etc) and the PFO staff need far greater knowledge about the people dimensions of natural resource management (basics in community organization, methods of information gathering, learning from people etc). Such knowledge exchange may be structured at the provincial level and mutually arranged by the PFOs and a coalition of civil society organisations which work in the concerned province. Given that CF is currently a state-driven initiative, it will be useful to ensure that non-government assistance is evenly spread across the CFs in the country. Mutually agreed norms to facilitate this should be worked out.

3.12 Reorienting Research & Development

Addressing the challenges which we have identified will require a reorientation of research and development activities and priorities. Fisheries research and development issues have been institutionalized and well organised in Cambodia after 1995. The Inland Fisheries Research and Development Institute (IFReDI) was established with a mandate to cater to the sustainable development of inland fisheries. The IFReDI had set itself a cogent traditional agenda of bio-ecological, socio-economic and technological research and development. There are also many other state and civil society supported research initiatives which have a bearing on the land and aquatic systems and the socio-economic terrain of the communities involved.

The twin foci for research and development must be natural resource integrity and community well-being. There must be a commitment to make data and information gathering as well as social process monitoring more participatory, paying adequate attention to realms of local socio-economic and ecological knowledge which are credible. Attention must be given to the 'micro-realities' of decentralized social and ecological space without losing the perspective of the larger framework of the

'global-picture'. The paradigm shift in research and development must be the commitment to the process of such contemporaneous micro-global analysis. An important precondition to achieve this will be for fishery researchers and

The twin foci for research and development must be natural resource integrity and community well-being.

technologists to take proactive steps to associate more closely and in a more systematic manner to the CF's - either directly or in collaboration with the fishery managers in the Provincial Fishery Offices .¹⁷

Assessing the new research and development needs will not be a straightforward task. Because of their focus on the 'micro-reality', the members of the CF may be unable to articulate their requirements in the form of concrete requests. The ideas for research and development must be sought more in the questions which the CF members have with regard to their newly acquired land and water resources. We provide some examples to illustrate the wide ranging research challenges ahead.

(i) Changes in Species Size and Composition and New Environmental Threats

The physical changes in the overall management of the flood plains would most certainly have influenced the migration and feeding patterns of the whitefish and the blackfish in the system. The fishers who relate to a specific CFA may only notice the local-level changes with regard to the blackfish. For example they point out how the quick and unhampered flow of water from flood plain channels into the rivers following the dismantling of the fishing lots have raised the productivity of blackfish in the rivers. However, fishers may not be adequately perceptive of the interactions between whitefish species and larger ecosystem changes. This is where scientists and fishery managers must collaborate with networks of local communities to study and manage whitefish across the full range of a species distribution.

Sand mining from the rivers for the booming

construction industry in another fast emerging environmental threat. There is also the increasing tendency for 'creeping encroachment' on wetlands -- euphemistically called 'wastelands' -- for construction of buildings near the upcoming urban centers. This can cause major changes in the water flow and flood water absorption capacity. There is little awareness of this among the fishers. Both these tendencies need to be studied carefully. In the case of the latter there is the major issue of the economic undervaluation of wetlands (Ratner et al, 2005)

(ii) Tackling Destructive Fishing

The total fishing effort has increased following the introduction of CF. But the effort itself is more widely spread out across the area of the flood plains. The incidents of destructive fishing have also increased with the advent of CF. Highlighting the ill-effects of destructive fishing is perhaps more important than introducing new gear. The individual and cumulative adverse impact of such actions will be more evident in a CFA than in a larger fishing lot. This calls for greater awareness building among the fishers. They need to be made familiar with the biological and ecosystem impacts of their actions using a variety of communications strategies.¹⁸ Commissioning systematic social and economic costs and benefits studies of the wide variety of fishing gears in use becomes an important input to assist in taking informed decisions on effort management in the fishery.

(iii) Agriculture in floodplains

The greater use of the floodplains for agriculture -- particularly rice production -- will increase with the introduction of CFs. The first step will be the clearing of more flooded forests for agriculture and fuel wood. The impact of this on the breeding and feeding of blackfish should be examined. This will be inevitably followed by greater use of chemical fertilizers and pesti-

There is need to explore the potentials of non-rice, low-input, organic agriculture which can maximize the use of the floodplains, but in a manner which will not harm the ecosystem.

¹⁷ According to the SDCFM Article 20, the CF committee can "seek technical and financial support from Fisheries competences, relevant institutions and donors for implementation of community fisheries activities"

¹⁸ More effective than the written word are means of communication which are closer to the current cultural ethos of the people. These can include folk arts and songs, puppet shows or the radio.

cides by larger numbers of people. The cumulative impact of this on the quality of the water in the floodplains and the adverse impact of this in the fishery resources is another area where greater awareness, closer monitoring and research will be required¹⁹. There is need to explore the potentials of non-rice, low-input, organic agriculture which can maximise the use of the floodplains, but in a manner which will not harm the ecosystem. Learning from the experiences of other countries in the region and outside, with similar floodplain utilisation dilemmas, should be a priority.²⁰

(iv) Impact of Built Structures

Research on the impact of built structures on water flow has been mainly restricted to the larger structures which have impact on the whole catchments area of the basin. The removal of barrier traps in erstwhile fishing lot areas implies that as the floods recede the water drainage is no longer impeded. This shortens the fishing season and leaves less water for farmers in the dry season. The building of smaller and new barriers at the level of individual CFA's will now become more widespread and more contentious too. It may also give rise to new conflicts between those in a CFA who depend more on farming and those who depend more on fishing. Assessing these local level changes is important to establish the relationships between physical structures, local ecosystem dynamics and changes and people's livelihood options within the context of the CF's.

(v) Understanding occupational pluralism and transitions

The potential for greater local control of resources as a dampener of rural-urban migration warrants study. Making the rural areas more labor-absorbing is an important goal for Cambodia's economic development.

With the introduction of CFs the scope for occupational pluralism will increase. Changes in the seasonal activity patterns between men and women, as well as the nature of involvement of children needs careful monitoring.

The potential for greater local control of resources as a dampener of rural-urban migration is a phenomenon that warrants study. Making the rural areas more labour-

absorbing is an important goal for Cambodia's economic development. That institutional change creates a reduction in the population pressure on natural resources in the long-run is a hypothesis worthy of examination. The conditions under which rural secondary and tertiary enterprises are created as fallout of vibrant CF functioning will be necessary to understand the scope for rural occupational transitions. Examining these changes over time is essential if the economic impact of aquarian reforms is to be assessed.

(vi) Development as Freedom

There have been proposals by commercial operators to restart fishing lots. There appears to be no adequate regulatory process to evaluate such proposals. This is also a realm where potential social conflicts can arise between fishing communities that have experienced the freedom of fishing without fear of repression and other interests in the state which wish to re-establish their hold on the aquatic resources of the country. When there have been major changes in access rights and property regimes by administrative fiat, the prospect of 'elite (re)capture' is always a possibility. Much depends on the way the social and political interests have evolved in the areas where such tensions arise. When a significant section of the population experience the development oriented consequences of their freedom, new synergies, new alliances and new strategies may result (Sen, 1999). Whether such institutional changes contribute to reducing the democratic deficit in a country is a sociological issue that warrants close study.

When there have been major changes in access rights and property regimes by administrative fiat, the prospect of 'elite (re) capture' is always a possibility.

4. Recommendations

Meeting the many challenges which will face the riparian communities and the numerous other actors involved in Cambodia's aquarian reforms will require many committed actions to be taken by various institutions and government departments of Cambodia to ensure that

¹⁹ See ADB, 2005 for an excellent summary of the land-water dynamics and related ecological issues.

²⁰ Vietnam, Indonesia and Bangladesh among others are obvious choices.

the benefits of aquarian reforms spread to the intended beneficiaries. Some of these actions can be achieved with better cooperation between existing institutions. Others call for renewed agendas in existing institutions. A few can be achieved only by undertaking totally new initiatives by all the stakeholders. We recommend below a few of the important measures to be undertaken. These are by no means exhaustive. But they point to the general direction in which research and policy will need to move if the aquarian reforms programme of Cambodia are to be completed effectively and well.

4.1 Lead Role for the Inland Fisheries Research and Development Institute (IFReDI)

The path breaking aquarian reforms introduced into Cambodia's inland fisheries will foster changes in other realms of the fish economy. Changes which will be induced in fishing technology, the hydro-dynamics and the impacts of these on the ecosystem warrant close monitoring. One important objective will be to diffuse fishing techniques that are more productive yet eco-friendly. Blending some of the traditional technologies with new materials for their fabrication and construction is one pathway to be explored. As the pace at which CF's take control of their areas increases in the future, understanding the hydro dynamics at the level of each CF will pose a significant challenge. The impact of the above on different fish species and the aquatic ecosystem require close monitoring and continuous study. Simple methodologies for this, which will utilise community participation, have to be devised. The Inland Fisheries Research and Development Institute (IFReDI) should take the lead to investigate ways to facilitate such research and development actions with appropriate participation of individuals and enterprises with the right competences. IFReDI should set up a two-way extension system to transfer research or technical information to farmers, fishers and fisheries communities and to obtain feed back on their needs. Appropriate changes in the governance of IFReDI need to be made and new incentive structures to attract good, professional and committed researchers should be instituted.

4.2 New Mission and Cooperation between Research & Development Institutions

The movement towards community manage-

ment of natural resources will call for reorienting institutions specializing in the research and development of different natural resources to be responsive to the needs of community groups. They must develop a common

joint mission about sustaining and improving rural livelihoods. This can be followed by integrating common areas of research among all the five main state agricultural research institutes: Inland Fisheries Research and Development Institute (IFReDI), Cambodian Agricultural Research and Development Institute (CARDI), Cambodia Rubber Research Institute (CRRRI), National Animal Health and Production Investigation Center (NAHPIC) and Forest Wildlife Science Research Institute (FWSRI) and their closer collaboration with other research agencies such as the Cambodia Development Research Institute (CDRI) are essential. This can be achieved by more structured linkages between the governance structures of these institutions. This should be prioritized by the Royal Government of Cambodia.

4.3 Collaboration for New Data and Information Requirements

The Department of Fisheries should re-examine the structure of its data gathering apparatus and make changes to accommodate the requirements of the new situation. The quality and timely availability of information is most essential for understanding the evolving complexities of community management of natural resources in Cambodia. The decentralization of fishery resource management calls for changes in the methodology, organisational pattern and sampling designs for data collection. The data collection on fish production and related biological information will need reorientation. There is need to systematically gather data and process information on the changing patterns of work and gainful employment among men, women and children which will result from the shift to CF. The economic, work organisation, socio-welfare and demographic implications of these changes must be assessed on a regular basis with the collaboration of the National Institute of Statistics and the Department of Planning to ensure compatibility with national accounts

The movement towards community management of natural resources will call for reorienting institutions specializing in the research and development of different natural resources to be responsive to the needs of community groups.

systems and development planning strategies of the country.

4.4 Comparative Analysis of Organisational Arrangements

The debate on the merits and demerits of the shift in the organisational arrangements from fishing lots to community fisheries will continue in Cambodian society for some time to come. The Department of Fisheries should initiate a study to make comparative, multi-criteria, social cost-benefit analysis of the currently operating fishing lots with that of community fishery areas. This will help to arrive at an objective understanding of the economic and socio-welfare implications to Cambodian society at large as a result of the shift from fishing lots to community fisheries. The need for new organisational forms to fulfill the expanding economic opportunities in the fisheries sector for decentralized processing and marketing should be studied. Pilot experiments on various organisational forms should be initiated and the economics of their operations evaluated.

4.5 Community Fisheries and the Decentralization and Deconcentration (D&D) Strategy

The D&D strategy of the Royal Government of Cambodia has become a keystone of its development agenda. The Commune Council (CC) which is the main institutional plank of the D&D agenda will become more viable and sustainable if the community initiatives for natural resource management such as the CF are brought within its ambit in the long run. This may require legislative changes. The feasibility and the desirability of such actions should be widely debated in civil society. The Ministry of Interior, the Ministry of Agriculture, Forests and Fisheries and the Ministry of Environment should work in tandem to achieving this goal.

4.6 Civil Society Organisations and Aid Agencies

Community resource management in Cambodia is inconceivable without the creative interventions of civil society organisations and aid agencies. Their involvements must continue in the near future. However it is important for both to plan for an exit strategy.

This is possible only when they make conscious efforts to foster sustainable development at the local level which is participatory, just and self-reliant. Efforts to structure people's contributions into community resource management should take priority. This contribution can be in the form of labour, material inputs and financial resources as appropriate. Such measures should be an integral part of any programme or project undertaken in communities for natural resource management. Greater coordination with state governance structures at the local levels in project planning, implementation and monitoring will be essential to prevent collective action which fails the moment assistance is withdrawn.

4.7 Creation of a Co-Management Applications and Training Institute

Sustaining and developing the pioneering nature of community fisheries and community forestry initiatives in Cambodia calls for continuous training of all stakeholders in the system. As such community organisations increase in number and develop in scope, the need for trained professionals to assist in their day-to-day operations will become a felt need. Moreover, given the worldwide interest in co-management initiatives, sharing the learning experiences of Cambodia will contribute to global people-to-people cooperation. To facilitate both these important objectives the Royal Government of Cambodia should take the initiative to start an autonomous institute for co-management applications and training with corpus funds from government, international development agencies and local community organisations. The governance of this new Institute should also be a model in co-management with the participation of representatives of government, people's community organisations, civil society and donors. There should be provision for greater representation of other segments of national and international society as the institute evolves in form and stature in the future.

Greater coordination with state governance structures at the local levels in project planning, implementation and monitoring will be essential to prevent collective action which fails the moment assistance is withdrawn.

Conclusion

The community access to resources, if managed well and strengthened, can yield significant familial and societal changes that sustain resources and foster convivial livelihoods. More than mere poverty alleviation, it can contribute significantly to enhancement of the capabilities and entitlements of the rural masses in Cambodia. Combined with enlightened advice and support from research and development agencies, local control over resources can lead to greater care and nurture of the unique aquatic eco-system of Cambodia.

In our visits to CFs we were informed about the greater livelihood opportunities available for men and the increased employment and income earning opportunities for women. People spoke about the manner in which the availability of greater money income was utilised to keep children healthier and educated. They spoke about reduced domestic violence. The greater control over local natural resources also leads to reduction in "push-pull"²¹ migration of men in search of work. These factors taken together can yield inter-generational reduction in infant mortality, family size, enhancement of educational levels and greater gender justice.

Such positive ecological, socio-economic and demographic changes will create different occupational expectations in the next generation. This can yield reduced population pressure on the aquatic resources in the not too distant future. Coupled with changes in the access right to aquatic resources, if there is a general revival of economic growth and employment opportunities in the country, this can result in the new generation opting for other gainful occupations. These opportunities can arise in small and medium village enterprises dealing with aquatic resource processing which can be rural-based, urban or export market oriented, and yielding higher incomes.

Greater economic democracy is a necessary condition for raising human dignity and creating stable political democracy and peace.

This will have far reaching implications for the future of the country.

Aquarian reforms in Cambodia have a long history. The earlier phases were measures taken with considerations aimed at efficiency and maximum rent extraction and tempered in accordance with some socio-political considerations. The current phase is anchored in the context of the country's recent voyage towards greater democratization and integration into the global economy. It is part of the government's Rectangular Strategy which is intended to:

"firmly and steadily build Cambodian society by strengthening peace, stability and social order, entrenching democracy and promoting respect for human rights and dignity"

These are indeed laudable objectives. The current move towards community fisheries should be seen as an important commitment towards achieving these goals. Being simultaneously a top-down and bottom-up approach, it is only natural that there will be doubts and anxieties about the sense and the viability of the whole enterprise both on the part of the government and the people. There is no need to concentrate excessively on the organisational form of the reforms. The debate is not about whether the inland fish of Cambodia are better harvested through large fishing lots or small community fisheries organisations. Aquarian reforms are complete only when those who directly relate to the aquatic resource through their labour, to give value and meaning to it, are assured the freedom and given their rightful rewards for doing so on a sustainable basis.

On this count a meaningful beginning has been made in Cambodia. But there will be many challenges ahead and a long way to go.

Aquarian reforms are complete only when those who directly relate to the aquatic resource through their labour, to give value and meaning to it, are assured the freedom and given their rightful rewards for doing so on a sustainable basis.

²¹ Migration theory that suggests that circumstances at the place of origin (such as poverty and unemployment) repel or push people out of that place to other places that exert a positive attraction or pull (such as a high standard of living or job opportunities).

References

Acharya S, 2003: Off-Farm and Non-Farm Activities in Rural Cambodia, *Cambodia Development Review*, Vol 7, Issue 1

Acker van F, 2003: Cambodia's commons: Changing governance, shifting entitlements? CAS/CIMDA Discussion Paper 42, Antwerp

Ahmed M Navy H, Vuthy L, Tiongco M, 1998: Socio-Economic Assessment of Freshwater Capture Fisheries of Cambodia: Report of a Household Survey, MRC, Phnom Penh

ADB, 2005: The Tonle Sap and its Fisheries, ADB-TSI Brochure, Manila

Ahmed M & Hirsch P (eds), 1999: Common Property in the Mekong: Issues of Sustainability and Subsistence, ICLARM Stud.Rev 26, Manila

Allan JD, et al, 2005: Overfishing of Inland Waters, *BioScience* Vol 55, No 12

Baran E, 2005: Cambodian Fisheries: Facts, Figures and Context, WorldFish Center, Penang

Best A, 2005: The Monk, the Farmer, the Merchant, the Mother: Survival Stories of Rural Cambodia, Japan Printing House, Phnom Penh

Blunt P & Turner M, 2005: Decentralization, Democracy and Development in a Post-Conflict Society: Commune Councils in Cambodia, in *Public Administration and Development*, 25, 75-87

Cacaud P & Sam Sok Phal, 2003: Review of Regulatory Framework for Inland Fisheries, TSEMP, Phnom Penh

Daly HE, 2005: Sustaining Our Commonwealth of Nature and Knowledge, Lecture delivered at the Forum on Social Wealth, University of Massachusetts, Amherst

Degen P et al, 2000: Taken for Granted: Conflicts Over Cambodia's Freshwater Fish Resources, Paper Contributed to the 8th IASCP Conference, Bloomington, Indiana

Degen P & Thouk N, 1999: Historical, Cultural and Legal Perspectives on the Fishing Lot System in Cambodia, in Ahmed M & Hirsch P (eds) 1999

Department of Fisheries, 2005: The Importance of Cambodian Fisheries Globally, Phnom Penh

Evans, P, 2002: Fishing Disarmed, Samudra (March), ICSF Publication, Chennai

FACT/EJF, 2002: Feast or Famine? Solutions to Cambodia's Fisheries Conflicts, London

FACT, 2005: Decentralisation and Natural Resource Management in Cambodia: Implications of the Decentralisation Process to Date. Phnom Penh

FAO, 1996: Management Guidelines for Asian Floodplain River Fisheries, FAO FTP 384/1&2, Rome

FAO, 1997: FAO Technical Guidelines for Responsible Fisheries -- Inland Fisheries (6), Rome

FAO, 2005: Fishery County Profile - The Kingdom of Cambodia (FID/CP/KHM), Rome

Guiseppe S, 2000: Khmer Rural Life in a Changing World: Village Solidarity, Social Networks and Development, Paper presented at the seminar on Khmer Culture and Globalisation, Department of Sociology Royal University of Phnom Penh, Phnom Penh

Hortle, KG et al, 2004: An Introduction to Cambodia's Inland Fisheries: Phnom Penh (Cambodia): Mekong River Commission. Mekong Development Series no. 4.

Keskinen M, 2003: Socio-Economic Survey of the Tonle Sap Lake, M.Sc Thesis, Helsinki University of Technology, Helsinki

Kurien J, 1998: Traditional Ecological Knowledge and Ecosystem Sustainability: New Meaning to Asian Coastal Proverbs, *Ecological Applications*, Vol 8(1) Supplement

Levinson J, 2002: An Examination of the

Community Fisheries Sub-Decree: Changes and Developments during the Drafting Process, NACA-STREAM, Bangkok

Ly Vuthy, 2005: Fisheries Co-Management in Cambodia, Note presented at the APFIC Regional Workshop on Mainstreaming Fisheries Co-Management held in Siem Reap

Marschke M, 2003: From Planning to Action: What Can Resource Management Committees Do On the Ground? *Cambodia Development Review* Vol 7, Issue 3

Munther Torsten, 2005: The Potential of Community Fisheries for Fair and Sustainable Natural Resources Management in Cambodia, Food Security and Nutrition Policy Support Project, GTZ, Phnom Penh

Oberndorf RB, 2004: Law Harmonisation in Relation to the Decentralisation Process in Cambodia, CDRI Working Paper 31, Phnom Penh

Oxfam America, 2002: Cambodia and Tonle Sap: Background Information, East Asia Regional Office, Phnom Penh

Pellini A, 2004: Traditional Pagoda Associations and the Emergence of Civil Society in Cambodia, *Cambodia Development Review*, Vol 8 Issue 3

Ratner B, 2004: Environmental Rights as a Matter of Survival, *Human Rights Dialogue* (Series 2 Number 11)

Ratner B et al, 2005: Undervalued and Overlooked: Sustaining Rural Livelihood Through Better Governance of Wetlands, WorldFish Center Studies and Reviews 28, Penang

Royal Government of Cambodia, 1999: The proclamation on the management and elimination of anarchy in fisheries, No. PROR KOR of 10 May 1999.

Tarr Chou Meng, 2002: Fishing Lots and

People in Cambodia
[http://www.rockmekong.org/pubs/Year2003/social/13_chou.PDF]

Sen A, 1999: Development as Freedom, OUP, New Delhi

So Nam & Bouy Roitana, 2005: A Review of Inland Fisheries Management in Cambodia. Paper presented at the International Seminar on Inland Fisheries Management, September 2005, New Delhi, India

Somony T, 2002: Concept of Fisheries Co-Management in Cambodian Context: A Case Study in Fishing Lots #3 and #6, Siem Reap Province, Cambodia, MBA (Thesis), Royal Agricultural College, England

Srun Lim Song et al, 2004: The Unsustainable Exploitation of Inland Fisheries Resources in Cambodia, paper presented at the FAO International Workshop on 'International Fisheries Instruments and Factors of Unsustainability and Overexploitation' held in Siem Reap

Touch ST, 2005: Implementation and Development of Fishery Community around the Great Lake Region Under the context of the Sub-Decree on the Management of Fishery Community, Paper Presented as FACT Workshop, Phnom Penh

Touch ST, 2001: System Approach to Inland Wetland Fisheries Reform: A Proposed Concept for Community-Based Fisheries Resource Management, Cabinet of the Council of Ministers, Phnom Penh

UNDP, 2002: Report on the Elections of the Commune Councils, Phnom Penh

Vibolrith C, 2000: Evaluation of Ex-fishing Lot No 5 after its abolishment in 1988, Siem Reap Province, Cambodia