



CHAPTER II

LITERATURE REVIEW

2.1 Theory and conceptual framework

Fisheries is one of the most important programmes among six MRC sub-programmes. The Fisheries Programme used a pilot study in order to define the MRC's Fisheries Programme. Using the sustainable livelihoods approach as a tool, field research was conducted in MRC beneficiary project sites in Laos at Namhoum Reservoir and Hoinamyen and Angnamhoum villages. This was to identify how the community responded to the projects.

There are some key terminologies which needs to be first defined such as “impacts”, “sustainable development”, and “sustainable livelihood development”.

2.1.1 What is impact?

‘Impact’ can be defined as the extent to which a project or programme has produced significant *change* in the lives of children, young people and their community. It is therefore more than the immediate, predicted output of an intervention, project or programme and much more focused on the implications of work in the medium and long term. This, crucially, should include examples of expected, unintended, positive and negative impacts. (Gosling, Louisa with Edwards, Mike 2003:126). In addition, a study that focuses on the programme usually looks at the process and results of the programme and then builds on this to understand what the impact is/or would be. Long-lasting change is often the result of a lengthy process of development. However, significant change or progress towards long-term change can also be detected in the short-term.

In addition, impacts can be classified into at least two categories: direct impacts and indirect impacts. **Direct** impacts can be identified from a matrix of which project components interact with the biophysical and social environment components. These are the environmental components directly affected (linked to) the project. **Indirect** impacts can be identified by making use of the networks of interconnections between components of the

biophysical and social environment, developed in the scoping exercise. (Sadar, M. Husain. 1996: 81)

The World Health Organization defines impact as: “A combination of procedures, methods and tools by which a policy, programme or project may be judged as to its potential effects on the health of a population, and the distribution of those effects within the population”

Other definitions of “impacts” would be: “Assessment of the change in health risk reasonably attributable to a project, programme or policy and undertaken for a specific purpose”; and “A systematic way of working to shed light on the health consequences of proposed policy decisions”. (<http://www.who.org>).

It seems agreed that “impacts” are the changes, effects, consequences and/or potential attributes that are produced by particular projects, activities, and policies. In this context, the impacts would include all forms of changes that have been made by the MRC’s Fisheries Programme at Angnamhoum Reservoir . Those changes have included both positive and negative impacts on Angnamhoum and Hoinamyen villages, Nasaithong District, Vientiane Capital, Laos, from 2000-2005.

2.1.2 Development Discourse

Development theory by itself has little value unless it is applied, unless it translates into results, and unless it improves people’s lives. (Lewis T. Preston, Former President of the World Bank, cited in Luther, Hans U. 2002: 24)

Development means different things to different people. When asked about “development”, economists would say economic growth is the most important kind of development, educationalists point to better education, medical doctors would stress the importance of the public health system, and political scientists would give priority to efficient institutions as a basic condition for development. Certainly, all these people are right in their professional way, but what we need for practical purposes is a working definition of “development”

Michael P. Todaro, in his book on economic development, mentions three important core values of development: sustenance, self-esteem and freedom. In the 1950s and 1960s,

development was viewed as a process of a series of successive stages of economic growth through which all countries must pass. Nobel Laureate W. Arthur Lewis said that the development theories put their focus on structural transformation and were mainly so formulated. More recent has been the neoclassical approach to development, which became popular in the 1980s, especially with the World Bank and the International Monetary Fund (IMF). This approach insisted on free markets, the privatization of public enterprises and on certain government regulation of economic activities. (Luther, Hans U. 2002: 25-33)

In summary, each of these approaches to economic development has something to offer, namely at least a better understanding of the mechanism of the development process and/or the progress itself.

The emergence of the concept of sustainability The concepts of sustainability and sustainable development evolved from two separate, but related, movements of earlier decades; one was concerned with environmental conservation and resource management, the other with development in the poorer countries of the world. (Robinson, John & Van Bers, Caroline 1995: 7).

When was sustainable development first used? The term “sustainable development” was first used in *World Conservation Strategy*. (IUCN-UNEP-WWF, 1980). The definition of conservation presented in this report provided the basis for the most enduring and popular definition of sustainable development, promoted in 1987 by the World Commission on Environment and Development, better known as the Brundtland Commission. In recent years, the Brundtland Commission’s proposal for economic growth has been criticized for failing to recognize the physical limits to material growth. Defenders of the concept point out that sustainable development is not synonymous with sustainable material growth, but that economic growth is possible if that growth is derived from improvement in quality i.e environmental quality and human quality of life, rather than quantity. (Robinson, John & Van Bers, Caroline 1995: 8).

Sustainable development is a vague term even though it is widely used. (National Research Council, 1993: World Bank, 1994). In a very general sense, sustainable development refers to a type of economic growth that is not environmentally destructive. Such a process would mean that the present generation would pass onto the succeeding generation a natural resource base equivalent to what it had inherited. However, sustainable development may also include local participation, empowerment, an equitable sharing of

society's resources, limits on consumption and energy use, and a new ethical relationship with the environment. (Thomas R. Leinbach – Richard Ulack, 2000: 32)

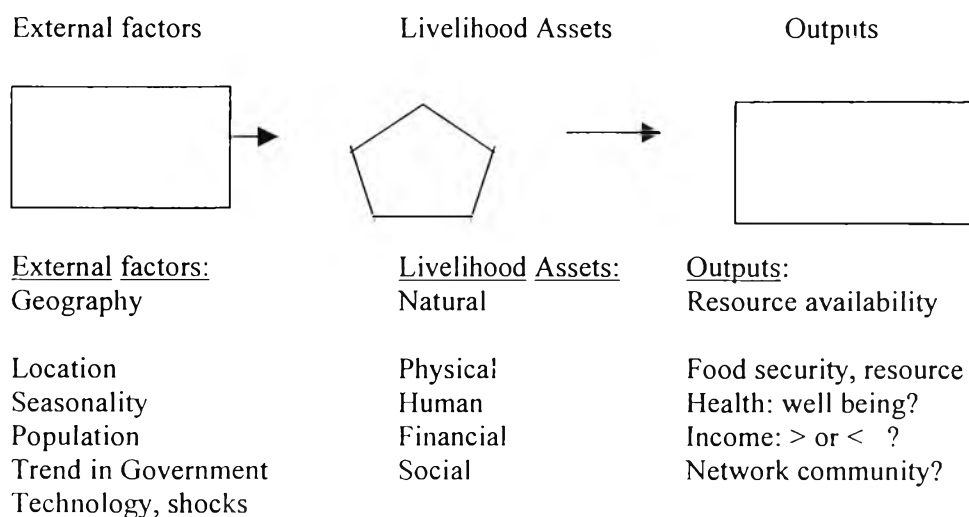
Another definition which is more explicit argues that “sustainable development” is the process of improving the quality of all human life; furthermore, it includes a dimension of consistency and sustainability, while also involving structural change in economic and social, attitudes, politics, administration, education and appropriate social values. (Thesvanich 1995: Chareonwongsak, Kriengsack 2004: 4).

Therefore, sustainable development is not only measured by GDP as was generally understood, but it should also include social satisfaction, public policies and, of course, sufficient nutrition-preservation of the environment to support healthy life. The most recent report on sustainable development attempts to argue that ensuring sustainable development requires attention not just to economic growth but also to environmental and social issues. (World Bank 2003: 1)

The Mekong River Commission is determined to achieve an economically prosperous, socially just and environmentally sound river basin (MRC 2000.b: 14). This is sustainable development from the MRC viewpoint

2.1.3 Sustainable Livelihood Development

Livelihood is simply the way people make a living. The concept of sustainable livelihood arose from the struggle to reconcile conflicting paradigms of the 1980s. (UNDP 2001: 71). The concept of a livelihood is widely used in contemporary writing on poverty and rural development, but its meaning can often appear elusive, either due to vagueness or to different definitions being encountered in different sources. The dictionary definition of “livelihood” is a ‘means to a living’, which makes it more than merely synonymous with income because it directs attention to the way in which a living is obtained. There are several researchers who have adopted a rural livelihood approach. (Carswell, 1997; Hussein and Nelson, 1998; Scoones, 1998). However, a popular definition is that provided by Chamber and Conway which was accepted by the World Bank and used as a standard of livelihood sustainable development. (Ellis, Frank. 2000: 7)

Figure 2.1.3 Conceptual Framework

Sustainable Livelihood: A livelihood comprises the assets (natural, physical, human, financial and social capital), the activities, and the access to these (mediated by institutions and social relation) that together determine the living gained by the individual or household. (Chambers & Conway, 1992: 7). However, external factors such as vulnerability will need to be addressed as well. This approach will help to analyze the issue.

Livelihood Assets

Natural Assets: Natural economic and cultural goods and services, including food (both farmed and harvested or caught from the wild), wood and fibre; water regulation and supply; waste assimilation, decomposition and treatment; nutrient cycling and fixation; soil formation; biological control of pests; climate regulation; wildlife; habitats; storm protection and flood control; carbon sequestration; pollination; and recreation and leisure.

Human Assets: The status of individuals, including the stock of health, nutrition, education, skills and knowledge of individuals; access to services that provide this, such as schools, medical services and adult training; the way individuals and their knowledge interact with productive technologies; and the leadership quality of individuals.

Physical Assets: Local infrastructure, including; housing and other buildings, roads and bridges, energy supplies, communications, markets and transport by air, road, water and rail.

Financial Assets: Stocks of money, including savings; access to affordable credit; pension schemes; welfare payments; grants and subsidies.

Social Assets: The cohesiveness of people in their societies, including the relations of trust that lubricate co-operation, the bundles of common rules, norms and sanctions for behavior; reciprocity and exchanges; connectedness; and social institutions.

(Adopted from Jules Pretty. 1998/ UNDP, Advance Rural Development 2001:72)

As a result, sustainable livelihood in a fisheries programme needs to identify the sustainability of these five assets:

How to measure sustainability?

One scale to which the notion of sustainability has been applied is that of the human exploitation of renewable natural resources such as fisheries, forests, underground aquifers and so on. For example, the sustainable yield of a fishery might be defined as the annual catch that maximize long run output without causing an irreversible decline in the fish population. (Ellis, Frank. 2000 :125)

Therefore, the measurements taken in this study are as follows:

Table 2.1.3 Fisheries Programme in a Sustainable Livelihood Context

Sustainable Livelihood	Fisheries Programme Implementation
Natural Capital	Conservation of the reservoir by promoting appropriate rule and regulations for fishing and identification of the fish conservation zone.
Physical Capital	Provision of the roads and/or vehicles to drive the project; tools for fishing i.e fishing gear, boats; IEC materials dissemination
Human Capital	Availability for fishermen of accurate information and capacity building on fish culture, project management and financial management. The community is able to forecast the amount of fish caught each year and is able to cope with potential constraints. The coordination skill, ownership and leadership of the project are improved

Financial Capital	Fish caught are sent to the market, and fishing is the source of income. Fish marketing is arranged by the local community. Fund raising by fisheries is desirable.
Social Capital	The relationship between the Reservoir Fisheries Management Committee (RFMC) and the fishermen is improved; non-fishermen have been involved in monitoring how the RFMC has helped the community.

2.2 Mekong Sub-Region Development Issue

2.2.1 Introduction

Claude Auroi (1992: 185) states “Social scientists interpret reality by reference to analytical and theoretical construction. We do not see how the world changes, how the resources shift between countries, regions or participants in the productive process, or even how institutions adjust. However, we have to try and understand what is happening around us, to analyze it and to interpret it. During time of relative stability our ingenuity is not greatly taxed and we get by using established routines to help our interpretation. But when change accelerates, new approaches are required. New research then needs to answer new sets of questions”.

It is obvious that the Mekong sub-region has attracted a number of scholars and the areas of culture, history and archeology are not the only ones. Institutions, administration, the legal framework and development in the modern period are also fascinating to explore and research.

In order to make sense of this topic, it is necessary to look briefly at what has been happening in the literature concerning the Mekong sub-region and Mekong cooperation, This will help us understand the roles and policies of Mekong cooperation from its inception to the present day, those roles and policies have changed, why those changes were made, and what were the consequences.

According to the 35 research findings presented at the international symposium organized in Khon Kaen, July 2004. In most of the research fields related to Mekong, cultural heritage, religion and identity have been conducted by Western scholars, while research on Mekong development and cross-border issues have been conducted by Asian scholars. This implies that Asian scholars are more concerned with the immediate obstacles.

This chapter will examine the existing studies relating to Mekong cooperation, in terms of legal-administrative systems, political systems, and the socio-economic systems at regional and national levels that have been carried out by both Western and Asian scholars.

2.2.2 Legal and Administrative studies

Initially there was no international organization model to follow when the Mekong Committee commenced its role in 1957. Consequently, the committee had to deal with many challenging tasks such as dealing with and formulating legal definitions of terms and concepts for water and related resources, the management of water, and relevance to international law.

Muntarbhorn, Vitit¹ addresses the first concern of legal name in terms of definition and function of a river: should it merely be a river or more than a river? Actually, there are many issues involving the Mekong; of course the Mekong is a river, and it is an international river. However, regarding the legal status of the Mekong Navigation, details are as follows: “ From the geographic point of view, according to the traditional conception of international river law, those rivers are considered international which, in their navigable part, are of territorial interest to two or more states. In addition, from the legal point of view, always according to the traditional conception of international law, a river is international whenever a state ceases to possess over such a river the full jurisdiction which normally belongs to a state on navigable water ways located wholly within its territory” (Muntarbhorn, Vitit. 1991: 4). At this stage, it can be said that the Mekong and/or an international river is defined in terms of boundary and function. Despite the fact that modern multilateral treaties are absent both in regard to navigable and non-navigable uses of rivers and/or water courses, it is submitted that a number of principles are generally accepted and are tantamount to international river custom binding all states. This covers the freedom of states to navigate on international river and/or water courses, and the need for reasonable and equitable utilization of the water resource for

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non-navigable purposes on the part of the states. It is the mutuality of rights and obligations of states which is increasingly espoused by the international community.

Besides the definition of the physical Mekong itself, the initial basic legal documents of the present Mekong committee should also be reviewed, in particular the Joint Declaration developed from the Helsinki Rules² which was appropriate in the past but is no longer appropriate today (Kethong, Patharapong 1995: 29).

A major limitation of the Joint Agreement was that the principle of sharing costs and benefits was not stated. (Article 31.). Nguyen Hac Vu (1991: 8) states that the apportionment of project costs, benefits, and compensation among the states concerned should be reviewed thereafter and revised as necessary on the basis of changing needs and circumstance so as to maintain their inherent equitability.

Both Danate A. Caponera (1991: 1-5) and Nguyen Dinh Thinh (1991: 3-4) agreed that the Joint Declaration of Principles for the utilization of the water of the Lower Mekong Basin is an important legal instrument for further utilization of the water and the preparation of project agreements. Nevertheless, the Joint Declaration should be updated, clarified and extended in order to respond to the changing situation.

The transformation of the Mekong Committee (1957-1994) into the Mekong River Commission (MRC) in 1995 and its implementation of the 1995 Agreement for Sustainable Development changed the picture from a bilateral to a multilateral agreement.

James Lyons Hutter (1963: 101) implies that the committee for the coordination of investigation is the policy and decision-making body for this project and is therefore at the top of the administrative organization. The committee is composed of representatives of the four lower Mekong states. With each of these states, of course, lies the ultimate authority for decisions. However, only as they act together, through the committee, are they fully

² The concept of international drainage basin illustrated in the 1966 Helsinki Rules formulated by the International Law Association and incorporated in the Joint Declaration of Principles of 1975 implies a reasonable and equitable share in the utilization by each basin state of the water of an international drainage basin. Such reasonable and equitable share is to be determined case by case, on the basis of the factors indicated by article 6 of declaration. The Declaration, however, does not specify the criteria to be followed to determine the weight to be given to each player. (Dante A. Caponera, Senior Legal Advisor, Mekong Secretariat, the paper presented to Workshop on Lower Mekong Basin, International Framework, 20-25 March 1991, 2003. Bangkok, Thailand).

responsible for the project. Acting individually, each state may, through its veto, act negatively, but this is only half of the matter since it cannot also act positively without the other three. Therefore, the real authority for the project can be said to lie with the four states jointly.

The committee is responsible for the promotion, coordination, supervision, and control of the planning and investigation of water resource development projects in the lower Mekong river basin. It is the project's board of directors.

2.2.3 Politics and Sub-regionalism

During the more than forty years of cooperation within the Mekong institution, the four lower Mekong states have gone through a period of mutually beneficial cooperation. However, there have also been serious political and ideological differences. The upstream-downstream differences in the 1990s resulted in an agreement to redefine the institutional and legal aspects of Mekong cooperation. This may reconcile the upstream and downstream differences and meet the modern requirements for sustainable use of water resources. (Kethong, Patharapong. 1995: 222).

A key political issue during the colonial period of the Mekong was the boundary dividing the socialist from the capitalist system. In the contemporary (peaceful) setting, the countries which lie along the Mekong now comprise the Greater Mekong Sub-region. These countries are southern China, Myanmar, Laos, Thailand, Cambodia and Vietnam. Apart from China, all are members of the Association of Southeast Asian Nations (ASEAN).

The Mekong region is more than the river, and more than the Mekong River Basin. It is a socio-political construct with wide scope and implications. The regional context is being shaped by a wide range of historical and contemporary forces. Partly as a consequence of relative peace, but due also to various other global and regional factors, there is increasing transnational regionalism. The surge in regional connections is led by the state, by business or by civil society. In some cases this is a re-establishment of old linkages. However, there are also alliances forming which seem quite new. (Kaosa-ard, Mingsarn & Dore, John 2003: 2).

The states and societies in Southeast Asia, especially those involved in Mekong cooperation through the MRC, have progressed dramatically. This was the initial stimulus

towards regional cooperation which was initiated by some farsighted national leaders. Regionalism has now become a permanent feature of the Southeast Asian landscape; it is not a case of whether regionalism will or will not succeed but of how to further strengthen the process of integration.

Regionalism

Before going any further, the concept of regionalism needs to be understood. Actually, there are many theories regarding this (Paul Sithi-Amnuai 1970, Hans H. Indorf 1984, Mingsarn Kaosa-ard & John Dore 2003, and Puspha Thambipillai 2004). However, I would like to focus on the most recent ideas of Puspha's concept of regionalism.

Thambipillai, Pushpa³ (2004: 198-200) gives a concept of regionalism which involves, firstly, the preferred choice of states in many regions of the world in working together for certain goals; secondly, sharing the identity and belief in the common destiny of all states and people in a region which evolves gradually; thirdly, regional success is often associated with multifaceted areas of cooperation; and fourthly, essential inter-governmental organizations are established and are state-driven.

If this is accepted, ASEAN has a true sense of regionalism. It also means that for regions to succeed in their goals of peaceful relations and development for their societies, a multitude of programmes need to be in place. In addition, from a regional perspective the Mekong River Commission could be seen as sub-regional, as it is made up of only four countries (not the whole of the SEA region). However, socially the Mekong Basin has developed a cultural and traditional identity and ethnicity, with the indigenous Cham, Khmer, Lue, and Lao-Tai people sharing culture, food and way of life; this has created the strong beliefs and religions that are a major contribution to the civilizations of mainland Southeast Asia. The MRC is an inter-governmental organization which is led by the four lower Mekong countries. The states are taking full responsibility for rights and obligations in utilizing and protecting the Mekong.

³ Dr. Pushpa Thambipillai, Department of Public Policy and Administration, Faculty of Business, Economics & Policy Studies, University of Brunei. ASEAN and the GMS: Partnership for Regional Community, paper presented at the conference on Regional Economic Cooperation; EU and GMS Development Strategies 2-4 July 2004, Mea Fah Luang University, Chiang Rai.

Moreover, the Mekong River Commission also has played a significant role in the regional era through the establishment of the ASEAN – Mekong Basin Development Cooperation (AMBDC) in 1996. Even though ASEAN materialized in 1967, ten years after the official beginning of Mekong cooperation, it was not too late for ASEAN to integrate and strengthen Mekong cooperation. Firstly, both ASEAN and Mekong cooperation shared the same vision of “sustainable development”.

Thus, another level of regional development cooperation is the ASEAN-Mekong Basin Development Cooperation (AMBDC). This forum was created in 1996 with three main objectives: to enhance economically sound and sustainable development of the Mekong basin, to encourage a process of dialogue and common project identification which would result in firm economic partnerships for mutual benefit, and to strengthen the interconnections and economic linkages between the ASEAN member countries and the Mekong countries. AMBDC is a cooperative framework involving all ASEAN countries and China (Sunchindah, Apichai. 2004: 230-233).

However, there are distinctions among the ASEAN members themselves such as the “old ASEAN” (Brunei, Indonesia, Malaysia, Philippines, Singapore, and Thailand) and the “new ASEAN” (Cambodia, Laos, Myanmar and Vietnam or CLMV), due to differences in socio structure, economic capacity and development.

2.2.4 Socio-Economic Development Issues

Claude Auroi (1992: 185) emphasizes that: “Most of the work in the development area over the past 30-40 years has focused on the ‘development problem’ of ‘developing countries’. It has been strongly policy-oriented, asking questions on the one hand about appropriate intervention to create sustainable economic growth and social development, and on the other about structure and process that have contributed to keep the majority of the people in most African, Asian or Latin American states in relative or absolute poverty”.

The Mekong region, one of the poorest parts of Southeast Asia, consists of the countries of the MRC, namely Cambodia, Laos, Vietnam, Burma and Yunan province in China. With a combined population of about 250 million sandwiched between booming Southeast Asia and emerging China, no one doubts that the region has immense potential.

Yet, like the river that runs through it, the economic potential of the Mekong region is so far only just that, potential.(Mya Than, 2004:1).

In the 21st century, the Mekong has become the center of international economic cooperation in areas such as the Golden Triangle between Laos, Myanmar and Thailand, the Greater Mekong Sub-region (GMS), which consists of six countries sharing the Mekong River, and the Mekong River Commission involving Cambodia, Laos, Thailand and Vietnam.

The Greater Mekong Sub-Region (GMS)⁴ Program started in 1992. Its goal is to promote economic and social development by strengthening economic linkages. During this period many development projects have been initiated, for instance transportation and infrastructural development, human resource development, cooperation in trade and investment, and environment and natural resource management. (Chareonwongsak, Kriengsack & Akrahood Paul 2004: 4).

Inthavanh, Chanpheng (1996: 37-38) stated that the development of the Mekong basin water resource system has been essential work for the four lower Mekong countries. The task to develop the Mekong water system is not easy, and no single country can do it alone. As already noted, among the countries, there are different needs and interests that reflect varying stages and strategies of political and economic development. Therefore, the major force that tends to induce one state to move towards cooperation with the other basin states is an appreciation of the need for more knowledge about the basin's water resources and their potential.

⁴ The Greater Mekong Sub-region or GMS was initiated by the Asian Development Bank (ADB) in 1992, to support Sustainable Development in Southeast Asia. The geographical area is composed of those countries which share a Mekong Basin boundary; the majority of the projects are infrastructure. However, in 2001 the programme was classified into 11 projects: 1) The North-South Economic Corridor; 2) The East-West Economic Corridor; 3) The Southern Economic Corridor; 4) Telecommunication Backbone and Information and Communication Technology; 5) Regional Power Interconnection and Trading Arrangement; 6) Facilitating Cross-Border Trade and Investment; 7) Enhancing Private Sector Participation and Competitiveness; 8) Developing Human Resource and Skills Competencies; 9) Strategic Environment Framework; 10) Flood Control and Water Resource Management; 11) GMS Tourism Development (<http://www.adb.org>)

2.3 Fisheries and Aquaculture Development

2.3.1 Fisheries Issues in the Lower Mekong Basin

“Where there is Water there is Fish”

Actually, there are three types of fishing. Firstly, *Deep Sea Fishing*: largely monopolized by a handful of industrial nations, it is regarded as one of the richest fishing grounds in the world. Secondly, *Artisanal Fishing*: This is fresh water and off-shore coastal marine fishing grounds by small family-owned boats. Thirdly, *Aquaculture*: fish farming which has been growing in importance over the past decade or so but still accounts for only 10% of the total global fish catch. It is an especially important source of protein in China, India and other Asian countries where millions of tonnes of fish, shellfish and prawn are produced annually. In most developing countries the water temperature is ideal for aquaculture, and the UN Food and Agriculture Organization estimates that yields from fish farming could be raised to around 40million tonnes per year. (Crump, Andy & Ellwood, Wayne 1998: 101).

The Mekong River Basin hosts one of the most diverse freshwater faunas in the world. There are 1,200 recorded fish species. (MRC, 2002.d: 1). Increased aquaculture production has been a key priority in all member countries and the Committee’s work has helped raise productivity through a number of projects. (Mekong Secretariat, 1989:63).

Three-quarters of the 56 million people living in the Lower Mekong Basin (LMB) earn their living from combining agriculture and fisheries. The agriculture sector has developed differently in the four LMB countries. Many communities in Cambodia and the Lao PDR are fully dependent on subsistence agriculture and fisheries. In Thailand and Vietnam, agriculture is more intensified with significant commercial production (MRC 2003.d:82)

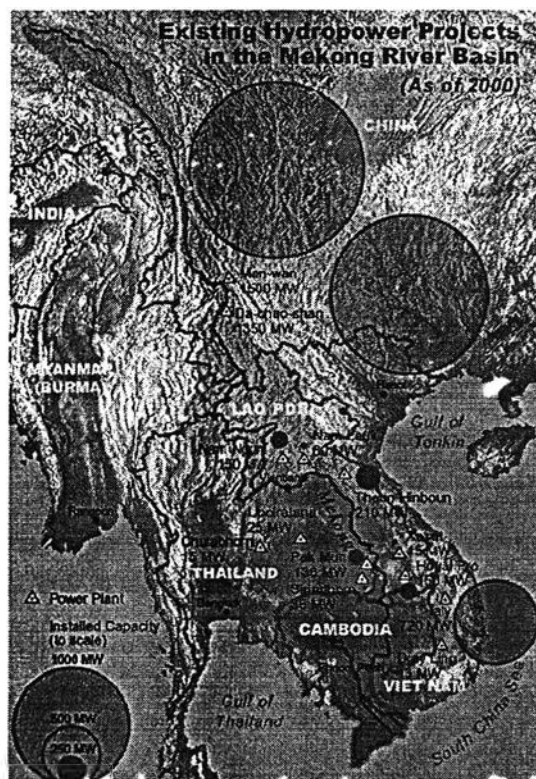
The desire to eradicate poverty has caused the four LMB countries to open their doors to external assistance. Many projects have been implemented and it is inevitable that there will be side-effects and ecological changes.

2.3.2 Development – Treats on Fish and Controversial issues

The management of the Mekong River Basin is not simple, what affects one part will affect the whole (<http://www.mrcmekong.org>). The Mekong now a focus for concern on the part of the downstream countries as China embarks on a major dam-building programme in Yunnan Province, will these dams have damaging effects on the river's vital role as a source of fish and a carrier of the silt that aids horticulture and agriculture? (ISEAS, 2000:429)

As it is known that the water fluctuation puts major pressure on all aquaculture life, power generation needs to take into account possible impacts on fisheries. It is quite clear that the flow from China is very important, meaning that the impact of the dams in Yunnan is potentially greater (Mekong News, 2003.a 2). How might the construction of dams affect the Mekong Fishery? If irrigation increases, what changes in water quality can be expected?, what impacts would population growth have on the demand for water? (Mekong News, 2004: 3). The new State of the Basin report 2003, released by the Mekong River Commission in August 2003, shows that the Mekong River Basin is still in good health, but there are some unexpected trends (Mekong News, 2003.b:1), such as building dams in China.

Map 2.3.2
Existing Hydropower Projects
In the Mekong River Basin



Source: MRC 2000

2.3.3 National Policies on Fisheries

It was noted that food security is the first priority of national social-economic development by the Cooperation and Planning Committee (CPC), (CPC, 2000: 10). Thus, the main objectives of the Lao Government in the agricultural sector is to improve and increase the productivity of all types of agricultural commodities to achieve national food security. In Laos, inland capture and culture fisheries involve a wide range of participants in the rural areas. The catch from these fisheries plays an important role in food security as it is mostly consumed by local communities and is an important source of animal protein in people's diets. Apart from this, inland fisheries also provide employment and livelihood opportunities. Fisheries are believed to account for about 8% of National GDP. (MRC 2002.c: 27)

At the moment, agriculture remains the key to economic activity in Laos, with most of the Laotian population engaged in subsistence agriculture. The advantage of focusing on developing Laos' agriculture potential is that this activity remains concentrated in the regional areas so income may be raised more evenly right across the country (Catherine Hesse-Swain. 1998: 127-128). It has been recorded that there are 250 Lakes and reservoirs in the Lao PDR (NSC 2000.a: 47). Capture of wild fish and other aquatic animals dominates fish production in the Lao PDR. It would be reasonable to estimate that 70 – 80 % of total production of fish is from caught fisheries and aquatic animal collection. The remaining 20 – 30% is from aquaculture. (<http://www.mekong.info.org/partners/larrec/index.htm>)

Fishing is an important secondary activity for many farm households as a source of extra income to supplement the family's food supply. All 56,000 holdings in the Lao PDR have some aquaculture facilities, usually pond fish culture. The total area under aquaculture is 6,400 ha. One in three holdings in Huaphanh (northern province of Laos) have some aquaculture facilities. It was found that over 70% of farm households in Laos engage in fishing other than aquaculture: 41% fish in rivers, 37% in lakes and reservoirs, 19% in rice fields, and 15% in swamps or seasonal flood plains. Fishing is widespread around the country: in Phongsaly, in the far north, 75% of farm households fish, and in Attapeu, in the far south, 82% of farm households fish. (NSC 2000.a: 9)

2.3.4 Existing research addressed to Fisheries Issues in Lao PDR.

Taki, Yasuhiko. (1968: 1974) states that few records have been published concerning the fish in Laos. Although there have been a considerable number of studies on the fish of Thailand and former French Indochina, few of them refer to the fish in Laos. However, Taki was able to give 146 fish species scientific names.

Until the mid-1990s, agricultural research in the Lao PDR was primarily conducted on research stations, from which technologies were identified for extension to 'model' farmers who were seen as the catalyst for adoption of the technologies by others. Research stations were controlled by 'line' departments, each with responsibility for research and extension in a particular commodity area (such as the Department of Livestock and Fisheries and the Department of Forestry), in order to implement the participatory development approach (Neef, Andreas. 2005:343).

However, Bush, Simon. (2004:1) claims that, the Lao PDR is one of the five remaining Marxist-socialist states in the world; it is led by the Lao People's Revolutionary Party which came to power in 1975 after more than two decades of civil conflict. As a single-party state, dissenting voices are not tolerated and there are no indigenous Non-Government Organizations (NGO). This leaves no room for traditional activist type research and of a truly participatory approach.

Besides the introduction of a participatory approach, co-management seems to be another issue that has been spoken about this decade. Phousavath, Sommano (1998) emphasizes the importance of the co-management which has been studied at Namngum Reservoir (Management of the River and Reservoir Fisheries or MRRF), (MRRF Phase-I: 1995-2000) funded by the Mekong River Commission. He recommends the establishment and development of an institutional monitoring and information network of fisheries with direct involvement and collaboration of local fishing communities and the local fish traders.

During the 2000s, there were several studies conducted by the Living Aquatic Resource Research Centre (LARReC) and there was also collaborative research, for instance more than twelve technical reports and thirteen research papers were officially published. (<http://www.mekonginfo.org/partners/larrec/index.htm>). Many of them have addressed the issues of fish biology, migration, life-cycles, indigenous fish, fish conservation zones, fish

trading, marketing, and assessments of the livelihood of inland fisheries in Laos. These studies were conducted mostly in Vientiane, Champasack and Lungprabang.

Although there were a number of studies conducted relating to fisheries and sustainable development in these decades, none of them conducted research in terms of sustainable development in the new context which consists of five assets: natural capital, physical capital, financial capital, human capital and social capitals as this research will provide understanding the complex interactions between people, communities, fisheries system and their environment, it is not a problem technology can solve (MRC 2000.a: 5). In addition, research is clearly needed to evaluate and better inform about project of which social and environment impacts are rarely documented and inadequately understood. To complement their technical knowledge, the fisheries managers must have an in-depth understanding of history, culture and society.

