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MRC SEA FOR HYDROPOWER ON THE MEKONG MAINSTREAM

SOCIAL SYSTEMS BASELINE ASSESSMENT WORKING PAPER

14 APRIL 2010

The MRC SEA of Hydropower on the Mekong mainstream comprises 4 main phases: (i) scoping, (ii) baseline assessment, (iii) opportunities & risks assessment, and (iv) avoidance, enhancement and mitigation assessment.

The Baseline Assessment Report has two volumes:

VOLUME I: Summary Baseline Assessment Report

VOLUME II: Baseline Assessment Working Papers

This working paper is one of eight in Volume II of the baseline assessment report. The two volumes formally conclude the baseline assessment phase of the SEA and documents the outcomes of the baseline consultations and SEA team analysis.

Disclaimer

This document was prepared for the Mekong River Commission Secretariat (MRCS) by a consultant team engaged to facilitate preparation of a Strategic Environment Assessment (SEA) of proposals for mainstream dams in the Lower Mekong Basin.

While the SEA is undertaken in a collaborative process involving the MRC Secretariat, National Mekong Committees of the four countries as well as civil society, private sector and other stakeholders, this document was prepared by the SEA Consultant team to assist the Secretariat as part of the information gathering activity. The views, conclusions, and recommendations contained in the document are not to be taken to represent the views of the MRC. Any and all of the MRC views, conclusions, and recommendations will be set forth solely in the MRC reports.

This document incorporates a record of stakeholder consultations and subsequent analysis. Whether they attended meetings or not all stakeholders have been invited to submit written contributions to the SEA exercise via the MRC website.

For further information on the MRC initiative on Sustainable Hydropower (ISH) and the implementation of the SEA of proposed mainstream developments can be found on the MRC website: http://www.mrcmekong.org/ish/ish.htm and http://www.mrcmekong.org/ish/SEA.htm

The following position on mainstream dams is provided on the MRC website in 2009.

MRC position on the proposed mainstream hydropower dams in the Lower Mekong Basin
More than eleven hydropower dams are currently being studied by private sector developers for the mainstream of the Mekong. The 1995 Mekong Agreement requires that such projects are discussed extensively among all four countries prior to any decision being taken. That discussion, facilitated by MRC, will consider the full range of social, environmental and cross-sector development impacts within the Lower Mekong Basin. So far, none of the prospective developers have reached the stage of notification and prior consultation required under the Mekong Agreement. MRC has already carried out extensive studies on the consequences for fisheries and peoples livelihoods and this information is widely available, see for example report of an expert group meeting on dams and fisheries. MRC is undertaking a Strategic Environmental Assessment (SEA) of the proposed mainstream dams to provide a broader understanding of the opportunities and risks of such development. Dialogue on these planned projects with governments, civil society and the private sector is being facilitated by MRC and all comments received will be considered.

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SOCIAL SYSTEMS BASELINE ASSESSMENT

1. ASSESSMENT PHASE

1.1 INTRODUCTION

Phase 1 of the Strategic Environmental Assessment (SEA) is now complete and the contribution of the social component included in its Inception Report. This study now covers Phase 2, Social Systems Baseline.

This paper presents a Situation Analysis reviewing overall country and Lower Mekong Basin (LMB) conditions without Mekong river mainstream dams, against key social topics identified in Phase 1. Treatment of these topics are broadly indicative rather than specific to a particular hydropower development. Situation Analysis up to this stage relies on review of existing literature and statistical information for the four Lower Mekong Basin (LMB) countries; sources are included in Annex 1. Trend analysis is used to chart national changes over time against key themes identified in Phase 1. Three key topics, each with several sub-topics, emerged during Phase 1 as priority for the social component:

Topic 1: Poverty, Ethnic Groups and Livelihoods

Topic 2: Health and Nutrition

Topic 3: Resettlement and Human Trafficking

Limited time and financial resources, coupled with specific requirements in the Terms of Reference did not allow for any community consultations or field research, normally a key function of social assessments. Nonetheless, the social component considered the knowledge gap between national strategies and local-level implementation such that at least additional district-level information was necessary to enable a more satisfactory "without dams" situation analysis. Methodology to select case studies is described in more detail below.

Complete results of case-study data gathering and GIS maps were not fully available at the time of preparing this report. Nonetheless, available provincial and district statistics for Lao PDR and Thailand have been included in Annexes 2 and 3 and referenced in the text.

Section C strengthens the "without Mekong mainstream dams" regional analysis by outlining key socio-economic trends in districts sampled as case studies, to better understand local complexities and regional factors which reflect where national development strategy meets on-the-ground realities. The methodology uses a sample selection of six of the eleven mainstream dams. Trend analysis based on a sampling framework of district secondary data assesses changes relevant to hydropower development that have already taken place and continue to occur. Trends are described mainly through:

- comparison of case study districts with national trends
- qualitative description of key poverty alleviation trends, their main drivers, and territorial dimensions in case study districts
- maps showing spatial dimensions of key socio-economic issues (where available)

In this documents, district case study data were provided in time for Lao PDR and Thailand, but not for remaining countries. Section C therefore reflects the Lao/Thai riparian district situation only. Nonetheless, the Lao/Thai districts comprise 70% of the sample and therefore provide a substantial data resource for this section,

Phase 3 (Opportunities and Risks Report) will assess future trends, costs and benefits of social issues discussed under key topics of the Social Theme in relation to the proposed development of 11 Mekong mainstream dams. Summaries of site-specific (i.e. upstream, construction site, and downstream) and cumulative impacts, as well as transboundary issues are presented. Opportunities and risks associated with the hydropower development are discussed, as is social equity. The process of identifying future trends enables stakeholders to engage on the important issues.

Phase 3 will conclude with a synthesis of the overall analysis of topics under the social component, together with an assessment of safeguards and mitigation measures and their linkages to the Mekong River Commission's (MRC) Procedures for Notification, Prior Consultation & Agreement (PNPCA) process.

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1.2 APPROACH AND METHODOLOGY

While the Assessment Phase has been termed a "baseline", it is not really a baseline in the usually accepted While the Assessment Phase is termed a "baseline", it is not really a baseline in the usually accepted sense. The SEA has not attempted, nor is it appropriate for a strategic assessment to do so, to obtain baseline data on potentially affected households and villages. This is more properly undertaken by specific projects through their social and environmental assessments. The SEA had access to Initial Environmental Examinations (IEEs) or Social Impact Assessments (SIAs) of three of the proposed 11 dams, and a post-event SIA of the Manwan dam in China. Additionally available were situation analyses of Stung Treng province, the Technical Feasibility Study of Lat Sua Hydropower Project, and a wide variety of publications covering country-specific information on the 3 social topics. The MRC's Integrated Basin Flow Management Progress Report[1] was made available to the team, but was not in final approved form at the time of preparing this section of the SEA.

Provincial and district data were gathered by four national teams against a prepared template discussed and reviewed by the SEA team and MRC. Social component topics were finalised in consultation with the Basin Development Planning (BDP) team, and developed to ensure complementary themes and indicators. However, full coverage of the BDP's selected indicators were not feasible given the broader scope of the SEA and the fact that while the BDP undertakes fieldwork and has a longer time frame to undertake the work, the SEA does not.

1.3 DATA QUALITY AND AVAILABILITY

There were some difficulties in obtaining comparable socio-economic data across all four LMB (Thailand, Laos, Cambodia and Vietnam) countries. Data used for indicators in this document are not absolute for several reasons. One difficulty of gathering comparable socio-economic data relates to the methods adopted by the different countries of obtaining statistical information which may not be the same in each country, or differ

[1] "Integrated Basin Flow Management Progress Report", Social Assessment Team, June-August 2007, Mekong River Commission, Water Utilization Program/Environment Program, 31st August 2007

between line agencies within a single country. For example, Lao PDR covers food security indicators differently from Thailand.

A second difficulty was that each country has different time frames to gather data, making it impossible to arrive at indicators which are exactly comparable. An effort was made to arrive at some standardisation within reasonably acceptable time frames for key indicators. Where possible, research drew on datasets collated by the United Nations, MRC and other international agencies such as the World Bank, as well as Census information from each of the 4 countries. Data sources are provided for tables and maps, as well as in Footnotes and Annex 1.

A third factor influencing the comparability of data is that socio-economic circumstances may vary widely between districts in any single province. Thus available data in provinces affected by the 11 mainstream dams may be skewed by data from districts unaffected by any of the proposed dams. This is particularly relevant to poverty data – Mekong river riparian provinces (particularly in Lao PDR) may have districts which are relatively prosperous in lowland areas but extremely poor in highland areas.

A final difficulty for the social component was that, unlike other themes, the MRC does not have the kind of social information database that supports an SEA, providing very few MRC resources to draw upon for identified social topics. Due to this, as well as of considerable variations within and between Mekong riparian provinces, it was decided to adopt a case study approach for the "without Mekong mainstream dams" scenarios, as described in the Inception Report (Social Systems). 6 of the 11 proposed dam sites were selected for the "without dams" scenarios, sited in Laos, Thailand and Cambodia. In addition, the MRC's IBFM report comprehensively covers the Vietnamese Mekong delta and Tonle Sap in Cambodia.

1.4 CASE STUDY SAMPLING FRAMEWORK

Riparian provinces and districts potentially directly affected by the 11 dams were tentatively identified during the SEA's Inception Phase (Table 1), taking into account sequenced impacts at construction sites, upstream and areas immediately downstream of the construction site. Vietnamese provinces affected indirectly by downstream consequences are included in Table 1. As the exact alignment of transmission lines is not yet known, provinces potentially affected by these associated facilities have not been included, though their land acquisition and compensation consequences should ultimately also be included.

A total of 13 provinces and 46 districts have initially been identified as being in the direct impact zones of the 11 proposed dams. Full identification was not possible, as site locations for several dams have not been finalised, and project-level maps and assessments of most of the proposed projects were not made available to the team.

To provide insights into differences in regional socio-economic trends "without Mekong mainstream dams", a sample of 6 of the 11 proposed mainstream dams was selected as case studies, using the following criteria:

- representative of dams with both transboundary and national impacts
- situated at different locations along the Mekong river
- dams whose locations are already known
- dams where data is more available through IEEs, SIAs, and supporting documentation

Of these 6 dams, 10 provinces and 13 case study riparian districts (Table 2) in the impact zones were sampled based on the following criteria:

- where transboundary effects could be expected in one or more districts
- representative of districts officially classified as poor, as well as non-poor districts
- which fall into one or more of the three hydropower impact areas[2] or which may experience impacts from more than one dam

As Table 2 shows, seven of the sampled districts may experience different impacts at different times during construction, impoundment and operational processes. The sequenced nature of such impacts over several years raise issues of long-term and cumulative socio-economic consequences, not just of immediate and visible effects directly related to one particular activity.

Shortly before baseline submission deadline, an additional requirement was asked of the SEA team, to define data by zones identified in the MRC's Integrated Basin Flow Management studies. As case study districts were selected according to agro-ecological criteria, this did not present a technical difficulty for final data presentation, though rearranging datasets at such short notice presented a considerable challenge. These zones are: Zone 1, from China border to Chiang Saen: Zone 2, Chiang Saen to Vientiane; Zone 3, Vientiane to Pakse; Zone 4, Pakse to Kratie; Zone 5, Kratie to Tonle Sap; Zone 6, Mekong delta.

1.5 ADDITIONAL STUDIES

No funds were available to undertake Additional Studies on existing experiences of Yunnan mainstream dams, therefore this aspect of the social component has been dropped. However, some literature reviews of impacts of the Manwan dam were accessible, and lessons learned are reflected in Section B.

[2] Socio-economic impacts of hydropower construction are first felt where construction sites are located (Area 1), through land acquisition, construction of associated infrastructure such as roads and contractors' camps, and through influx of outside workers and those seeking opportunities at the construction site; secondly during impoundment (Area 2), when impacts are experienced with elevated water levels; thirdly during operations (Area 3), where impacts may be experienced downstream.

Table 1: Provinces and Districts in Impact Zones of 11 proposed Mekong mainstream dams

No.	Dam Name	Country	Affected Province	Affected Districts/ Municipalities (* indicates where relocation can be expected)
1	**Pakbeng**	Lao PDR	Oudomxay	Pakbeng*
				Houn
			Xayaboury	Ngeun
				Xianghon*
				Hongsa
				Khop*
			Bokeo	Paktha*
				Houayxai*
				Tonpheung*
		Thailand	Chiang Rai	Chiang Khong
2	**Louang Prabang**	Lao PDR	Louang Prabang	Pak Ou*
				Chomphet*
				Louang Prabang
			Oudomxay	Nga*
3	**Xayaboury**	Lao PDR	Xayaboury	**Xaignaboury***
			Louang Prabang	**Louang Prabang**
				Nan*
				Chomphet
4	**Pak Lay**	Lao PDR	Xayaboury	**Pak Lay***
				Kenthao
				Xaignaboury*
			Louang Prabang	**Nan***
			Vientiane	**Xanakham**
				Met*
				Kasi
5	**Xanakham**	Lao PDR	Vientiane	**Xanakham***
				Met*
			Xayaboury	**Kenthao***
				Pak Lay*
6	**Sangthong Pakchom**	Lao PDR	Vientiane	Sangthong*
				Xanakham*
			Xayaboury	**Kenthao***
		Thailand	Loei	Na Haeo
				Dan Sai
				Phu Ruea
				Tha Li
				Chiang Khan
				Pak Chom*
			Nong Khai	Sangkhom
				Si Chiang Mai
				Tha Bo
				Meuang Nong Khai
7	**Ban Kun**	Lao PDR	Champassack	**Xanasomboun***
				Phonthong
			Saravane	Khongxedon*
				Lakhonpheng*
		Thailand	Ubon Ratchathani	**Khong Chiam***
				Si Meuang Mai*
				Pho Sai*
				Na Tan*
8	**Lat Sua**	Lao PDR	Champassack	**Phonthong***
				Xanasomboun*
		Thailand	Ubon Ratchathani	**Khong Chiam***
9	**Don Sahong**	Lao PDR	Champassack	Khong*
				Mounlapamok*
				Pathoumphon*
				Soukhouma*
		Cambodia	Stung Treng	Stung Treng

indicates dams where transboundary impacts can be expected
districts classified as poor and high priority
districts classified as poor

Bold highlight indicates a district affected by more than one dam

* Indicates district where resettlement of households is required, where this information is available. Impacts such as downstream operations will be experienced by other districts

Sources: P. Messerli, A. Heinimann, M. Epprecht, S. Phonesaly, C. Thiraka, N. Minot (eds), *Socio-Egonomic Atlas of the Lao PDR: An analysis based on the 2005 Population & Housing Census,* Swiss National Centre of Competence in Research (NCCR) North-South,

Table 2: Case Study Dams, Provinces and Districts

No.	Dam Location	Transboundary impacts		Country	Affected Province	Affected District	MRC Zone	Location		Impact Area			Classified Poor	
		Yes	No					Left Bank	Right Bank	Upstream: headpond	Construct ion Site	Down stream	Yes	No
1	Pakbeng	✓		Lao PDR	Oudomxay	Pakbeng	Zone 2	○		•	•	•	✓	
					Bokeo	Paktha	Zone 2	○		•			✓	
				Thailand	Chiang Rai	Chiang Khong	Zone 2		○	•				✓
2	Xayaboury		✓	Lao PDR	Sayaboury	Sayaboury	Zone 2		○	•	•	•	✓	
					Luangprabang	Nan	Zone 2	○		•				✓
3	Pak Lay		✓	Lao PDR	Sayaboury	Paklay	Zone 2		○	•	•	•		✓
					Vientiane	Med	Zone 3	○		•	•	•	✓	
4	Lat Sua	✓		Lao PDR	Champassack	Pakse	Zone 3		○	•	•	•		✓
				Thailand	Ubon Ratchathani	Khong Chiam	Zone 3	○		•	•			✓
5	Don Sahong	✓		Lao PDR	Champassack	Khong	Zone 4	○	○	•	•	•		✓
6	Sambour		✓	Cambodia	Stung Treng	Stung Treng	Zone 4	○				•		✓
					Kratie	Sambour	Zone 4	○		•	•	•		✓
					Kratie	Kratie	Zone 4	○				•		✓

2 BASELINE: LOWER MEKONG BASIN OVERVIEW WITHOUT MEKONG RIVER MAINSTREAM DAMS

2.1 TOPIC 1: POVERTY, ETHNIC GROUPS AND LIVELIHOODS

2.1.1 DEMOGRAPHY OF THE LOWER MEKONG BASIN

The people of the Lower Mekong Basin (LMB) are drawn from a wide range of social and ethnic The people of the Lower Mekong Basin (LMB) are drawn from a wide range of social and ethnic groups. Those living in Mekong river riparian provinces and districts live and depend for their livelihoods on some of the most productive land in the region. Because riparian areas provide the best agricultural land, and because the Mekong river itself provides unsurpassed opportunities for communities to diversify their livelihoods through fishing, gathering of aquatic products, and transportation, to name just a few options, they are also the most heavily populated, particularly in Vietnam. The total number of Mekong riparian provinces is listed in Table B.1, with a population of slightly over 32 million people.

As Table B.1 indicates, at 66% Lao PDR has the highest percentage of LMB country population resident in Mekong river riparian provinces. Although the largest riparian provincial population is in Vietnam (55%), all proposed 11 Mekong mainstream dams are sited in the other 3 LMB countries.

The total population of riparian provinces in the immediate impact areas of upstream, construction site and downstream locations of the 11 proposed Mekong river mainstream dams, amounts to a smaller figure of 7,518,723 people. This figure does not include the populations of indirectly impacted downstream provinces. This is almost 23% of the total population of all LMB riparian provinces, which themselves account for 18% of the total country populations of Thailand, Lao PDR, Cambodia and Vietnam.

The MRC's recent "Integrated Basin Flow Management, Progress Report"[3] notes that of those communities living within a 15km-wide land corridor alongside the Mekong river (i.e. well within potential impact zones of mainstream dams), Thailand has the lowest percentage of riparian dwellers, representing just 2.8% of its national population and 7.6% of the total population in the Mekong river corridor. Vietnam has the largest representation of corridor population, at close to 12 million people. This represents just over half the total corridor population. Cambodia, with around 7.6 million people in the corridor, being more than half its national population (57.2%) and about one third of the corridor population. Just over one third of the Lao national population is to be found in the corridor, although, because of the low population density, this represents only 8.6% of the total living in the 15 km corridor.

[3] Mekong River Commission, "Integrated Basin Flow Management, Progress Report", Social Assessment Team, Water Utilization Program/Environment Program, June-August 2007

Table B.1: Demographic and administrative data for Mekong River riparian provinces in the LMB

COUNTRY	PROVINCE	POPULATION	%MEKONG RIVER RIPARIAN POPULATION	% NATIONAL POPULATION
Lao PDR 11 provinces	Bokeo	145,263	14%	66%
	Oudomxay	265,179		
	Luang Prabang	407,039		
	Xayaboury	338,669		
	Vientiane	388,895		
	Vientiane Municipality	618,318		
	Bolikhamxay	225,301		
	Khammouane	337,390		
	Savannkhet	825,902		
	Saravane	324,327		
	Champassack	607,370		
Thailand 7 provinces	Chiang Rai	1,129,701	18%	8%
	Loei	607,083		
	Nong Khai	883,704		
	Nakhon Phanom	684,444		
	Mukdahan	310,718		
	Amnat Charoen	359,360		
	Ubon Ratchathani	1,691,441		
Cambodia 5 provinces	Stung Treng	111,734	13%	29%
	Kratie	318,523		
	Kampong Cham	1,680,694		
	Kandal	1,265,085		
	Prey Veng	947,357		
Vietnam 13 provinces	Can Tho Municipality	1,171,000	55%	20%
	An Giang	2,170,100		
	Bac Lieu	829,300		
	Ben Tre	1,360,300		
	Ca Mau	1,251,200		
	Dong Thap	1,682,700		
	Hau Giang	808,500		
	Kien Giang	1,727,600		
	Long An	1,438,800		
	Soc Trang	1,301,700		
	Tien Giang	1,742,100		
	Tra Ving	1,062,000		
	Vinh Long	1,069,100		
Total provinces	36	32,087,897	100%	

Sources: Government of Lao PDR, "Results from the Population and Housing Census, 2005",National Statistics Centre, Vientiane; Kingdom of Cambodia, National Institute of Statistics, Provisional Population Totals, Population Census 2008; Kingdom of Thailand, Population Censuses 2000, 2005 and 2008, Key indicators and Preliminary Results, and Key Statistics of Thailand, National Statistics Office: Socialist Republic of Vietnam, Population & Housing Census 1999, General Statistics Office

In case-study provinces, statistical data (Annex 2, Table 2.1) reflect country differences in key demographic indicators. Depending upon provincial location and accessibility, average household size in Lao PDR riparian provinces is higher than in those of Thailand and Cambodia, but the opposite is true in relation to population density, with Thailand showing the largest population numbers as well as the highest population density per km² (96.7 and 107.4 for Chiang Rai and Ubon Ratchathani respectively) compared to Lao PDR (averaging 24 persons per km²) and Cambodia (19 persons per km). The two Cambodian case study provinces of Kratie and Stung Treng have a proportionately

higher urban than rural population, while for both Lao PDR and Thailand, provincial populations are overwhelmingly rural.

Growth rates are similar for most case study provinces, at approximately 3% per annum, except in Thailand and Kratie, which are less than 1% per annum for Chiang Rai and Ubon Ratchathani, and just under 2% for Kratie. There is a reasonable gender balance between male and female in all case study provinces. Champassack shows a slight weighting in favour of the female population, reflecting the relatively higher male migration rate from this province.

2.1.2 NATIONAL POVERTY ALLEVIATION STRATEGIES AND POVERTY INCIDENCE IN THE LMB

The definition of what poverty is exactly and how it can be measured has been hotly debated for many years now. A nutrition-based approach formed the basis for defining several national poverty lines throughout the 1970s and 1980s, before being expressed in local currencies to develop a national benchmark of $1 a day in purchasing power parity terms[4]. This figure has been revised to today's yardstick of $1.25 a day, but many economists argue that $2 a day is a more realistic and humane standard.

Whatever the global figure, it is well recognised that no single factor is the cause of poverty, which is a condition far more diverse and complex than simply measuring income, spending power, or calorie intake. The definition of poverty has gradually become re-defined as a state of "capability deprivation", a range of limitations and barriers that prevent individuals from rising out of poverty. These include social, political, environmental and economic factors[5]. Also included are ethical and social equity dimensions, which look at whether a suitable environment is created for people to live a decent live, where they are free to make their own decisions, and where external factors do not create an environment of uncertainty, fear or periodic shocks from which people increasingly cannot recover and where their resilience is persistently and effectively undermined.

National strategies, policies and programmes for poverty alleviation are relatively consistent across the 4 LMB countries, related to and based on Millenium Development Goals (MDGs). Each LMB country has, with the support of international agencies, developed national Socio-Economic Development Plans (Annex 2, Table 2.2)[6] which are both time-bound and centred on nationally defined goals.

Core common MDG goals for all LMB countries include:

[4] "Development Aisa", Year II, No. V, October- December 2009, Asian Development Bank, Data Asia-Pacific MDG Study Series, "The Millenium Development Goals: Progress in Asia and the Pacific 2007", (an ESCAP/ADB/UNDP project), www.adb.org/Documents/Reports/MDG-Update-2007

[5] Ibid, Margo Pfeiff, "What does it mean to be poor?", pp. 22-24

[6] Each country has developed Household Living Standard Surveys, either using the UNDP's Human Achievement Index (HAI) (Thailand), Expenditure and Consumption Surveys (Lao PDR), and Poverty Reduction Strategy Plans (PRSP) (Vietnam & Cambodia),

Goal 1 Eradicate extreme poverty and hunger

Reduce extreme poverty by half

Reduce hunger by half

Goal 2 Achieve universal primary education

Goal 3 Promote gender equality and empower women

Goal 4 Reduce child mortality

Goal 5 Improve maternal health

Goal 6 Combat HIV/AIDS, malaria and other diseases

Halt and begin to reverse the spread of HIV/AIDS

Halt and begin to reverse the spread of malaria and other diseases

Goal 7 Ensure environmental sustainability

Halve the proportion of people without clean drinking water

Halve the proportion of people without sanitation

Priorities for each country reflect variations on these core values, depending on national priorities. National sectoral plans include more targeted poverty-alleviation strategies, such as Vietnam's programmes for communes in remote, mountainous regions, or Lao PDR's nutrition policies. Country profiles for each LMB country showing progress against MDG indicators can be accessed on the World Bank website (www.worldbank.org). SEA country profiles are also included in the SEA Inception Report. Supporting legislation towards achieving these MDG goals has been approved in all countries. Additionally, key international agreements have for the most part been signed by LMB countries (Table 1.2), reflecting national levels of commitment on key socio-economic issues in the region.

Table B.2: Ratification status of key social and cultural international agreements by LMB countries

LMB Countries	International Covenant on Civil & Political Rights 1966	International Covenant on Economic, Social and Cultural Rights 1966	Convention on the Elimination of All Forms of Discrimination Against Women 1979	Convention on the Rights of the Child 1989	ILO 169 Convention concerning Indigenous and Tribal Peoples in Independent Countries 1989	International Convention on the Protection of the Rights of All Migrant Workers & Members of Their Family 1990
Laos	●	■	■	■	x	x
Thailand	■	■	■	■	x	x
Cambodia	○	■	■	■	x	●
Vietnam	■	■	■	■	x	x

■ Ratification, accession or succession

• Signature, not yet followed by ratification

○ Ratification of ICCPR and signature of optional protocol

x No signature

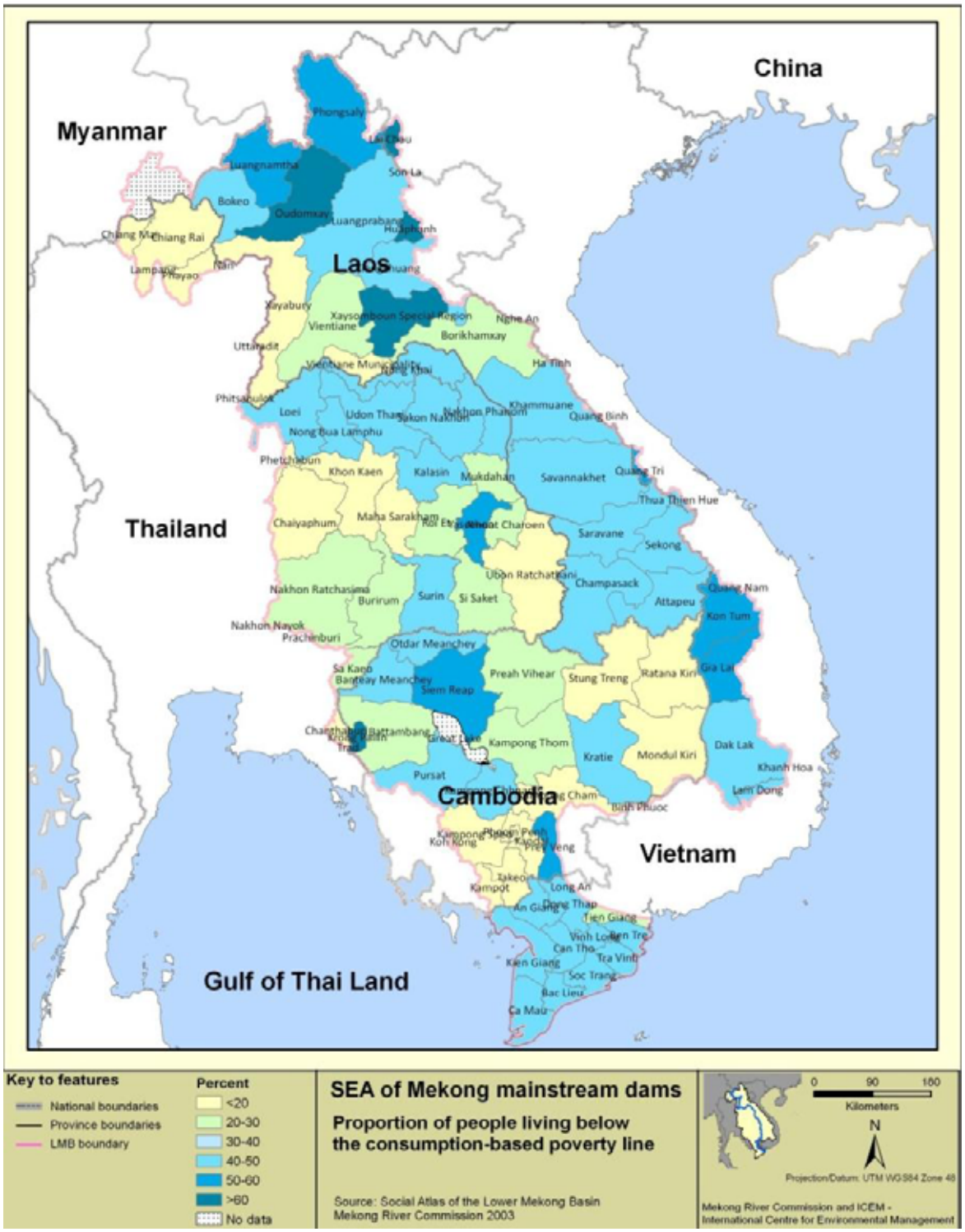
All countries share the view that the most successful poverty reduction policies are based on sound macroeconomic policies and promotion of efficient resource allocation. However, the definition of what these resources are, how they should be allocated, and who should exploit them, varies considerably, not just between LMB countries, but between line agencies in each country. For

example, during the SEA consultation process, Vietnamese line agencies[7] pointed out that while the Mekong Delta is well studied and understood, poverty levels remain high and the benefits of development are not well shared due to complex reasons, including land degredation through increasing salinisation, high levels of migration to the Delta as well as high levels of population growth, effects of climate change already being experienced with rising sea levels, to name but a few. While some causes of poverty are well known and provide the MDGs with their current goals and targets, other causes are dynamic and changing.

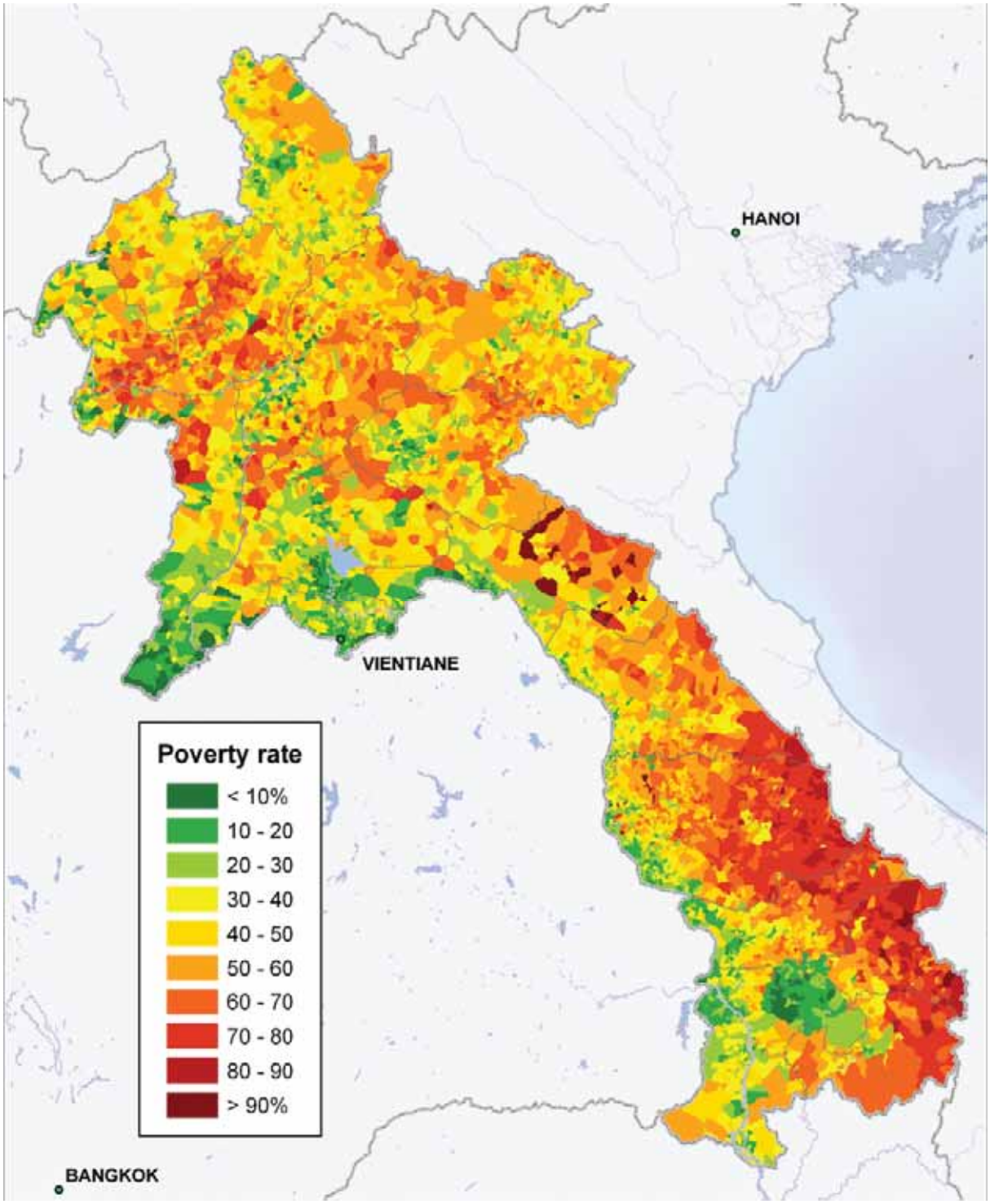
Normally legislation lags behind events on the ground, policies and laws being retrospective and reflecting efforts to balance and reconcile often widely differing, and sometimes conflicting, interests. With respect to socio-economic policies and strategies, the reverse is sometimes true, and policies on social and environmental sustainability on several aspects (including on land acquisition and forced displacement) of hydropower development, are now generally in place in all LMB countries but still need improvement in translating policy into local-level practice.

Who then are the poor in the LMB, and where is the highest incidence of poverty? The poor are defined by LMB countries in both qualitative and quantitative ways. Quantitative assessment adopts a (i) food poverty line; (ii) overall poverty line. The first refers to food security, the second to lack of a combination of food and non-food necessities (e.g. shelter, clothing).

[7] SEA Inception Report, National Scoping Summaries, Cambodia, 23rd October 2009



Map B.1: Proportion of people in the LMB living below the consumption-based poverty line



Map B.2: Incidence of poverty by village, Lao PDR [8]

[8] (Source: Map I1, p. 133, "Socio-Economic Atlas of the Lao PDR: An analysis based on the 2005 Population & Housing Census", by P. Messerli, A. Heinimann, M. Epprecht, S. Phonesaly, C. Thiraka, N. Minot (eds), Swiss Centre of Competence in Research (NCCR) North-South, University of Bern, Bern & Vientiane, 2008)

Map B.1 reflects the incidence by LMB province of people living below the consumption-based poverty line. Mekong river riparian provinces generally have higher living standards than those further distant from the river Mekong (particularly in upland and remote locations). The only riparian province where more than 60% of the population lives below the poverty line is Oudomxay (Lao PDR), though several other provinces reflect a high incidence of poor households (50-60%), including Luang Prabang, Khammouane and Savannakhet (Lao PDR), Nakhon Phanom (Thailand), and Prey Vieng (Cambodia).

Provincial poverty data show widely differing situations in case study provinces (Annex 2, Table 2.3). However, these data must be treated with caution, being weighted by statistics from upland districts which have always been poorer than lowland districts. Section B will provide a closer look at poverty indicator specifics for case study districts when updated. However, the majority of Mekong river riparian areas remain among the most prosperous in each of the LMB countries, The exception is in provinces in northern upper reaches of the Mekong, where land is more steeply elevated and less cultivable in close proximity to the river and where there is river-level cultivable land in these areas, it is in very short supply indeed.

Thailand has higher percentage provincial riparian poverty rates than Lao PDR, and Cambodia has the highest provincial poverty rates of all riparian provinces in Stung Treng and Kratie at 46.1% respectively. Oudomxay, Luang Prabang and Bokeo in Lao PDR, and Stung Treng in Cambodia, have the highest percentage of poor households of all case study provinces. Champassack has the lowest percentage (19.7%) of poor households of selected Lao provinces, and Ubon Ratchathani (0.3%) of all LMB countries. However, when these figures are compared against actual household numbers (Annex 2, Table 2.3), even though Ubon Ratchathani has the lowest poor household percentage at 0.3%, it has a high absolute number (11,886) of poor households compared to Bokeo, for example, with a provincial percentage of 52.6% numbering an absolute total of 13,480 poor households.

With respect to other sample poverty indicators, Lao PDR shows the lowest percentages of female headed households, while Chiang Rai in Thailand shows the highest at 25.5%. All case study provinces in Thailand and Cambodia show very high levels of female-headed households compared to Lao PDR, probably indicating the importance of remittances from male migration rather than higher poverty levels, given overall data from combined poverty indicators. This is supported by statistics on rice production as a percentage of per capita requirements[9]. Four provinces in Lao PDR (Oudomxay, Xayaboury, Bokeo, Luang Prabang) show negative production in relation to needs, whereas Chiang Rai and Ubon Ratchathani show substantial surpluses, as does Stung Treng.

Qualitative poverty assessments (participatory poverty assessments – PPAs) have also been carried out in most LMB countries, emphasising causation and perceptions of poverty through the eyes of their multi-ethnic populations. These PPAs focus on understanding people's thoughts on why they

[9] The FAO/WFP calculates an average consumption of rice to ensure daily food security is estimated at 1 Kg of paddy (equivalent to 0,6 Kg of milled rice) per person per day.

are poor. Many of these thoughts dwell more on impacts of national policies relating to land tenure, which are addressed in more detail under the Resettlement Topic. However, the 2006 Lao PDR PPA[10] adds 2 more definitions of poverty in addition to monetary poverty, relevant to hydropower development. These include:

- Cultural poverty – where poor people themselves define poverty as loss of culture
- Intellectual poverty – where poverty refers to a lack of analytical capability leading to an inability to design programs that will alleviate poverty

Hydropower development links to both quantitative and qualitative poverty assessment – the policy rationale for hydropower is primarily presented from the quantitative perspective (more funds will enable governments to provide more non-food necessities such as schools, health clinics, roads and market access, thereby ensuring food security), while qualitative poverty assessments are more linked to perceptions of those directly experiencing impacts of hydropower construction, and focus on concerns relating to loss of homes, land and livelihood resources, cultural and social ties, and being distanced from any consultation or decision-making process.

All LMB countries have made progress in **poverty alleviation** since 1990 when assessing against the 7 key MDGs. According to the 2009 Global Hunger Index (GHI)[11], Thailand and Vietnam have reduced the undernourished population by more than 50% since 1990, while Laos and Cambodia show a decrease of between 25-49.9%. Figure B.1 shows the GHI percentage of food insecurity reduction over 20 years, while Figure B.2 shows the trend in poverty reduction for selected food insecurity key indicators.

Educational levels have also generally improved. All LMB countries recognise that their citizens have the right to education, though some experience more difficulty in delivering it in reality, particularly in remote, upland locations. MDG2 seeks full primary schooling for all boys and girls by 2015. Figure B.3 indicates progress in achieving youth literacy rates in the LMB. All countries have made progress, but Laos and Cambodia lag behind Thailand and Vietnam, constrained by both financial and human resource provision. The education system in both countries remains critically under-funded and largely dependent on external assistance, with insufficient allocations for recurrent costs, and little added incentives for teachers to remain in remote and isolated areas.

Youth literacy data are missing for several years, with only 1999 having a full country set[12], showing Thailand leading the field with a 96.1 ratio, followed by Vietnam (88.4), Cambodia (79.3) and Laos (78.7).

Gender equality may be seen in ratio of literate boys to girls, reflecting social and economic priorities in access to education, as well as in political empowerment and opportunities to participate in

[10] James R. Chamberlain, "Participatory Poverty Assessment II (2006)", Lao PDR, National Statistics Centre & Asian Development Bank, October 2007

[11] "2009 Global Hunger Index: The Challenge of Hunger, Focus on Financial Crisis and Gender Inequality", WeltHungerHilfe, Concern Worldwide, International Food & Policy Research Institute (IFPRI), October 2009

[12] World Bank, country profiles

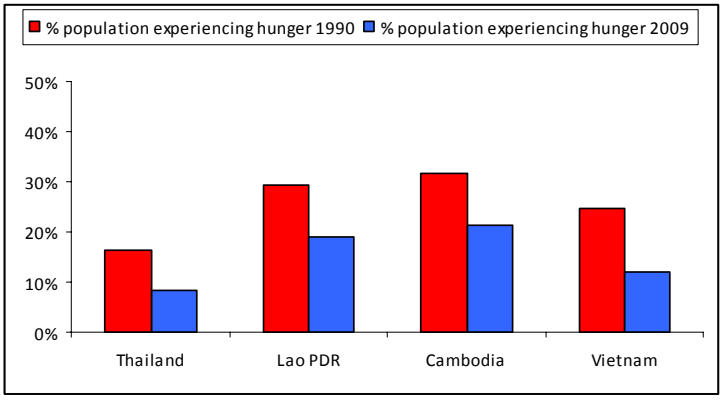
economic activities which benefit themselves and their families. While female education shows relative progress in the ten years between 1990 to 2000, boys remain more advantaged than girls when families choose who to educate.

When looking at case study provinces, however, the significant differences between male and female literacy rates indicate that all LMB countries have some way to go before gender equality in education is achieved (Annex 2, Table 2.5). Provinces with the highest levels of inequality are Oudomxay and Bokeo (Lao PDR) and Kratie (Cambodia). Luang Prabang and Stung Treng provinces also show significantly lower educational attainment of females compared to males. Interestingly, only Oudomxay shows higher school dropout rates of females to males, whereas for almost all other provinces in Thailand and Lao PDR they are lower or on a par.

Regionally and globally, gender equality ratios are echoed in other spheres as shown in table 1.3. Regional ranking includes 8 countries, while global ranking includes 110 countries. Cambodia consistently ranks lowest of all LMB countries across all scales, with the surprising exception of political empowerment, where Thailand ranks lowest of the LMB countries.

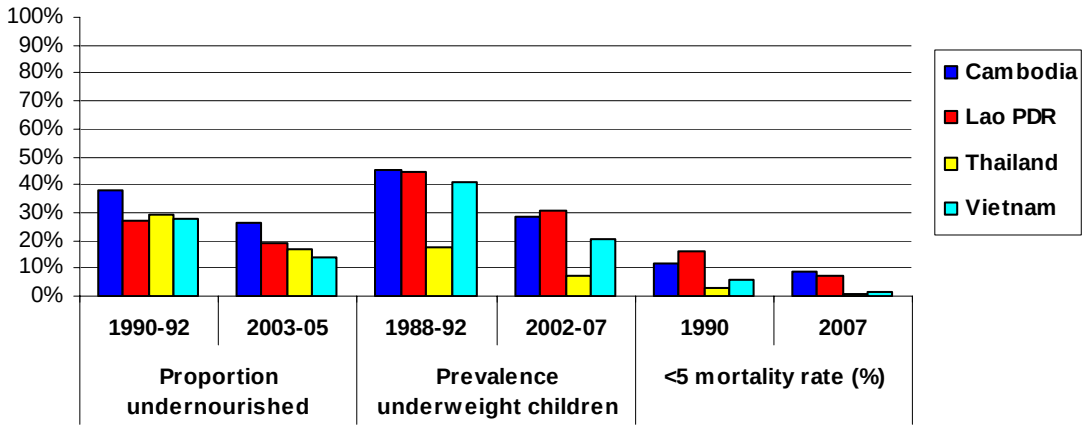
Substantial international experience indicates that girls' schooling is more responsive to household and school characteristics than boys' schooling. However, the cost of reaching education to remote areas is such that many governments feel it is easier to move the people to the facilities, rather than the facilities to the people. This strategy, while enable national achievement towards meeting one MDG goal, limits national achievement towards meeting other MDG goals, namely to eradicate poverty and hunger by removing communities from their resource base without providing an alternative resource base.

Figure B.1: Percentage reduction in undernourished population in LMB countries between 1990-2009



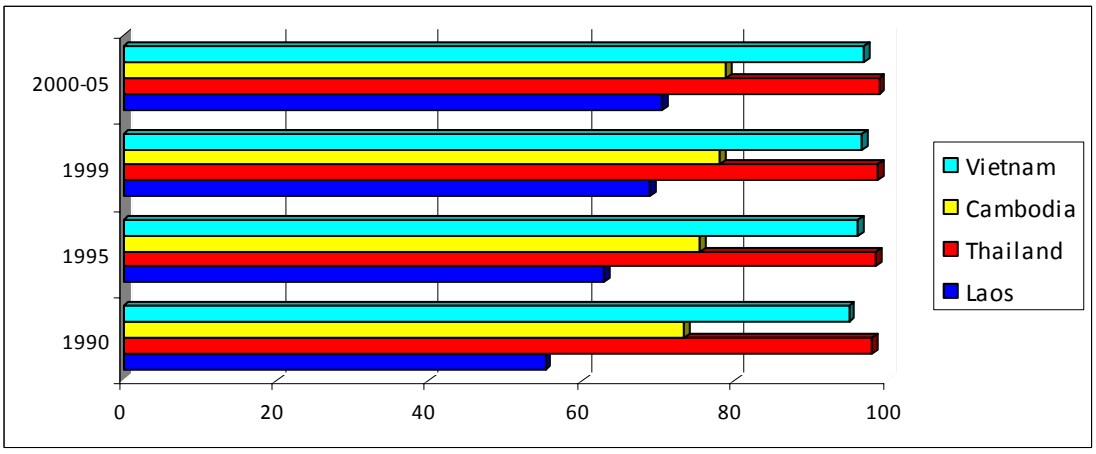
Source: Global Hunger Index 2009

Figure B.2: Poverty reduction trends in the LMB for selected key indicators



Source: Global Hunger Index 2009

Figure B.3: Youth literacy rates in LMB countries (% ages 15-24)



Source: World Bank MDG targets, country profiles

Table B3.3: Regional and global gender equality rankings of LMB countries, 2009

LMB Countries	Educational attainment		Political Empowerment		Economic participation & opportunity	
	RANK					
	Regional	Global	Regional	Global	Regional	Global
Laos	ND	ND	ND	ND	ND	ND
Thailand	3	36	7	70	4	16
Cambodia	8	74	5	57	6	36
Vietnam	7	66	3	42	3	15

Source: Global Hunger Index 2009

2.1.3 POVERTY ALLEVIATION, SOCIAL EQUITY AND HYDROPOWER

Countries may, however, feel that their impressive efforts towards poverty reduction through reaching the MDGs have come at the expense of dependence on external financing, in turn creating more reliance on the wishes and perspectives of external funders. The desire to follow a more independent road has contributed substantially to development of revenue generation strategies which give national governments more control over their own resources, and more say as to how revenues from such resources are distributed.

Proponents of hydropower development as a means of poverty alleviation argue that increased revenues can fund broader social equity by directing them to meet national needs such as:

- expansion of health, education and social services
- improvements in transport, communications, water supply, electrification (particularly cheap rural electrification), and other public infrastructure
- investments by hydropower developers in project areas will improve local infrastructure and facilities, boost the local economy, and improve the local skills base
- control flooding
- provide irrigation

Opponents of hydropower development argue that hydropower has a record of social and environmental destruction, and that the costs of their adverse impacts outweigh the benefits they might bring. These adverse impacts include:

- environmental degredation
- loss of property, assets and livelihoods for directly affected people
- creation of a "boom and bust" cycle which ultimately leaves local people worse off than before

In November 2000, the World Commission on Dams issued a report[13] discussing the complexities of large dam development, setting out both advantages and disadvantages. It noted that the heart of the debate rested on "issues of equity, governance, justice and power". The WCD aimed for a balanced view the subject of hydropower, recognising difficulties, while also recognising the benefits dams have provided. It noted that:

- dams have made an important and significant contribution to human development and benefits have been considerable
- some of those benefits have often come at too high a price in social and environmental terms by those displaced by a hydropower project, by downstream communities, by taxpayers and by the natural environment
- distribution of benefits provided by hydropower are not equitably distributed, and those able to access them are rarely those directly affected by their production

[13] "Dams and Development: A New Framework for Decision-Making", World Commission on Dams, 2000, Earthscan Publications

While some stakeholders in LMB countries argue that mainstream hydropower is in the national interest for poverty reduction and self-reliance, other stakeholders argue that it is against national interests because of transboundary effects and the consequences for exacerbating tensions between countries. Inevitably each sector thinks its own concerns are the most important ones. The role of hydropower in poverty alleviation centres on two perceived national opportunities: increasing national revenues, and maximising the economic potential of a national resource base. The presumption is that social equity is built-in through benefits sharing – ie. increased national revenues mean greater financial resources to fund activities which will help a country meet MDG targets, such as construction of schools and health centres, provision of clean water supplies and sanitation, etc., while simultaneously reducing dependence on external funding for this purpose. Lao PDR is the only country to explicitly link poverty alleviation with hydropower development[14], and has developed a National Hydropower Policy linking environmental and social sustainability to hydropower development[15].

Yet are those who are poor in each country also those who are vulnerable to potential changes in the Mekong river and associated resources? There is a need to distinguish between poverty and vulnerability here - the United Nations Food and Agricultural Organisation (FAO) Food Insecurity and Vulnerability Information and Mapping System (FIVIMS) defines vulnerability as: "the full range of factors that place people at risk of becoming food-insecure. The degree of vulnerability of individuals, households or groups of people is determined by their exposure to the risk factors and their ability to cope with or withstand stressful situations."

The concept of vulnerability is not just linked to the ability to resist project-induced impoverishment, but also to resist social impoverishment. Social impoverishment includes that which disrupt homogeneous and co-dependent communities by forced displacement from locations where they have developed economic, cultural, spiritual, and social relationships. When compensation is restricted to cash alone, this leaves relocation choice to individual households, who may not be able to replicate their social structures and who are removed from their cultural and spiritual ties, and completely fails to account for loss of common property resources. Community institutions and social networks are weakened, cultural identities and the potential for mutual self-help are diminished or lost[16].

The higher the level of dependence on natural resources, the greater the opportunities for impoverishment to communities affected by any change in such resources. This is notable when comparing poverty levels between Thailand and Laos, for example[17]. Although Thailand has the

[14] Government of Lao PDR, "National Growth & Poverty Eradication Strategy 2003"

[15] Government of Lao PDR, "National Policy: Environmental and Social Sustainability of the Hydropower Sector in Lao PDR", Science, Technology & Environment Agency (now WREA), 2006

[16] World Bank, (2001) Operational Policy 4.12, Involuntary Resettlement, paragraph 1

[17] Mekong River Commission, "Integrated Basin Flow Management, Progress Report", Social Assessment Team, Water Utilization Program/Environment Program, June-August 2007

largest number of people living in the LMB, Laos has the highest percentage of its population living in the LMB. In Champassack province (Laos) compared to Ubon Ratchathani province (Thailand) on the opposite side of the Mekong, we have seen the percentage of poor households in each province – Champassack 19.7% of the population, vis-a-vis Ubon Ratchathani 0.3% of the population.

While at national levels, hydropower fits into national strategic plans for poverty alleviation, at local, implementing levels, the way in which these strategic plans are operationalised still presents substantial challenges to viewpoints whether hydropower contributes to poverty alleviation or to poverty augmentation. It has been pointed out that decision-makers about hydropower take a voluntary risk, and in turn transfer a substantial proportion of the risk to the developer, but those directly affected by hydropower projects have no say in the matter and are involuntary risk bearers. As the World Bank notes:

"As voluntary risk takers, private companies manage their increased exposure to risk by requiring higher financial rates of return. Their risk management procedures are well developed. ... Unlike the above risk takers, however, the displaced persons are those on whom the risks are imposed. The risks to displaced communities are compounded if they have no say in the decisions related to their future, but have to bear the consequences."[18]

Voluntary risks are managed prudently. Imposed risks are rarely managed well. The "trickle-down of benefits" approach has not been well experienced internationally. For those with low levels of confidence in decision-makers' willingness or capacity to address what makes people poor, it is difficult to understand how a hydropower project is a national benefit in which all can share. The concept of poverty alleviation through the provision of infrastructure and services funded by hydropower is too far removed from the more immediate experience of those directly affected by such projects, who have to cope with the sort of consequences which directly affect their living standards.

Using dams as a method to finance national development and to achieve poverty reduction goals centre almost entirely on related physical infrastructure rather than on biodiversity-centred livelihood needs, which are the prime stated needs of most populations in LMB countries. This requires a fundamental shift from the type of livelihood base that is currently typical of LMB populations, i.e. an independent mix of subsistence-based and market-based productivity, independent of wage labour, to a wage- and commerce-based livelihood base.

Experience of hydropower projects in the region appears to indicate the distribution of benefits often appears arbitrary and often leaves out those directly affected by the project. This has led observers to question the validity of the developers' claim that hydropower development contributes to local poverty alleviation. For example, local people affected by the Manwan dam on the upper Mekong river in China[19]have no access to the electricity it generates, and claim they have not received the

[18] Ibid, p. 353

[19] See Katri Makkonen, "Mekong Cooperation – the Linkages Between Poverty, Environment and Transboundary Water Management in Southwest China's Yunnan Province", Helsinki University of Technology, Espoo, no date; John Dore, "Yunnan Hydropower Expansion: update on China's energy industry reforms and the Nu, Lancang and Jinsha hydropower dams", Working Paper, Chiang Mai's University Unit for Social & Environmental Research, March 2004; Zuo Ting, "Cases of Local

promised regular compensation from the government. Local employment benefits from construction of both the Manwan and Dachaoshan dams were available for a few years during construction, but these were short-term in nature, and are said to not have made substantial contributions to sustainable economic growth in the area. The ADB calls this phenomenon a "boom-bust" cycle. The only longer term benefits have been improved transportation in the areas. Again, tensions are reported among northern Thai and Lao river-dependent communities who are concerned at very low river flows and apparent fluctuations. No-one is sure of the extent to which this can be attributed to China's upstream dam managers.

In the case of the Lancang cascade, those obtaining the benefits appear to be the hydropower developers and the eastern provinces now able to tap into cheaper electricity. The experience of Yunnan appears to be that it is extremely difficult to integrate economic development, poverty alleviation and environmental conservation, in a meaningful way.

The key as to whether hydropower development is an effective response to poverty alleviation is not whether the national resource base of the Mekong river and LMB countries' river systems provide opportunities for economic development, but also: (i) whether the offset of resources lost in the hydropower development process are comparable to resources gained as a result of hydropower operations; (ii) whether positive revenue generation is equally matched by effective expenditure management for poverty alleviation; (iii) whether those responsible for constructing and managing hydropower projects are as competent in social, livelihood and environmental design and risk mitigation management as they are in engineering design and management; (iv) whether local administrative capacities are sufficient to link relevant national poverty alleviation policies to on-the-ground hydropower-related activities; (v) whether the number of affected people are correctly estimated beforehand or not.

Experience to date has demonstrated that hydropower construction and operation in Southeast Asia presents risks to people's living standards, livelihoods, and basic rights under national constitutions if adequate planning is not implemented. Good planning should ensure that hydropower construction and operation involves only a temporary setback to affected communities. More typically it creates a new poverty that has been defined as "project-induced poverty", as it is superimposed on pre-existing poverty[20]. A survey on dam-induced displacement in 50 cases[21] concludes that in only 3 out of 44 dams, did living standards improve for those directly affected by dams. Five factors in various combinations were associated with impoverishing outcomes, namely:

- lack of staffing capacity
- lack of finance

Transboundary Environmental management in Border Areas of the Mekong Watershed in Yunnan, China", College of Rural Development, China Agricultural University, no date; Yu Xiaogang, Jia Jiguo, "An Overview of Participatory Social Impact Assessment for Manwan Hydropower Station in Lancang River", Yunnan Provincial Academy of Social Sciences, no date

[20] Review of the International Hydropower Association's Draft Protocol for Assessing the Sustainability of Hydropower Dam Projects, by the International Network on Displacement and Resettlement, 11th December 2009

[21] Thayer Scudder, "The Future of Large Dams: Dealing with Social, Environmental, Institutional and Political Costs,", London: Earthcan (2005)

- lack of political will
- lack of opportunities to resettling households
- lack of household participation in the resettlement process

Other factors contributing to impoverishment of affected people were resettler inability to cope with host and in-migrating populations. Of the 50 dams selected for the study, 6 were located in Thailand (Pak Mun and Khao Laem), China (Shuikou and Yantan), and Lao PDR (Nam Theun 2 and Nam Ngum). The size of the dam proved irrelevant to outcomes, it was the decision-making process and implementation methodology which was found to cause positive or negative outcomes.

To take the case of the Pak Mun dam as an example, Scudder concludes that while political will was present in this project, the resettlement process failed because of inadequate feasibility studies, inadequate prior planning, and too much reliance on cash compensation as the major component in the resettlement plan[22].

In other parts of the Lower Mekong Basin where dams have not been constructed, a pattern of socio-economic and resource decline can already be observed in some locations. Water contamination through human, agricultural and industrial waste, illegal logging, forest habitat and wetland destruction from land clearance for agricultural and commercial expansion. and practices such as excessive hunting, and over-fishing often using illegal methods, have already led to many eco-systems disappearing and important species, such as the Irrawaddy dolphin, the giant Mekong catfish, and Siamese crocodile, being brought to the verge of extinction. Further impacts on the natural resource system, whether rivereine or land, will aggravate these trends. Inevitably these will affect those most dependent on the disappearing natural resources.

A report issued in 2007[23] notes progress on achieving many MDGs in the LMB countries, but also notes the worrying trend of increasing poverty in relation to environmental degredation. Apart from MDG Goal 7[24], it acknowledges that current MDG indicators are presently inadequate to monitor this increasingly important factor satisfactorily and needs further sub-indicator development, such as land degredation and depletion of coastal and forest areas. This is also relevant to future hydropower development, as both direct and indirect impacts of hydropower construction and operation may both reduce or exacerbate environmental factors of poverty incidence.

When hydropower projects affect water and land-related resources of communities dependent on those resources, those directly affected may or may not be poor, but all are vulnerable, and those who are also poor, are more vulnerable than those who are not. The level of dependence on those environmental resources defines scope of hydropower impacts.

[22] Ibid

[23] "The Millenium Development Goals: Progress in Asia and the Pacific 2007", United Nations Economic & Social Commission for Asia and the Pacific (UNESCAP), Asian Development Bank (ADB), United Nations Development Programme (UNDP), http://www.unescap.org/stat/mdg/

[24] Goal 7: Ensure environmental sustainability, with the sub-goals to (i) halve the proportion of people without clean drinking water; (ii) halve the proportion of people without sanitation

Experience from hydropower to date has already shown that while dams may open up new opportunities for those living in proximity to them, local people often do not benefit by association or are not in a position to grasp new opportunities, as their vulnerability levels may have been increased by their loss of land, property and access to natural resources, particularly if there has been no supporting livelihood restoration programmes or adequate safeguard application. New opportunities attract outsiders for tourism and trade, resulting in elevated land and property prices, which often price local people out of the area particularly if they have only been provided with cash compensation for their losses. It is also common for the well connected to profit from the situation, moving quickly to snap up opportunities, and excluding local people. Thus with poor environmental and social support to a hydropower project, a dam may risk creating a pool of people in the immediate vicinity of the impact areas who were not poor before, but are subsequently.

2.1.4 ETHNIC GROUPS AND THE MEKONG RIVER

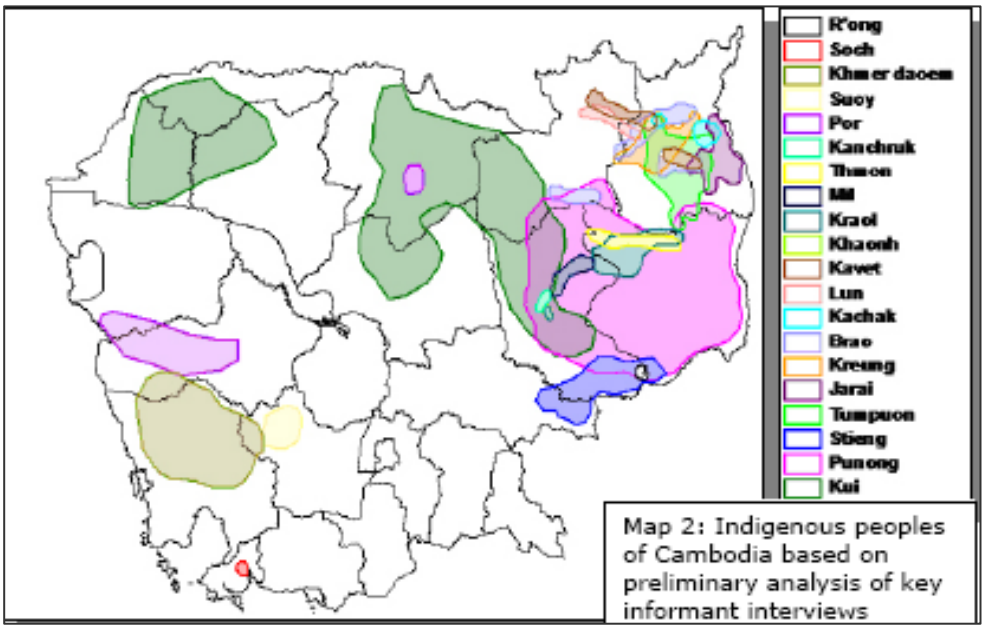
The countries of the LMB show a rich ethnic diversity, with many distinct ethnic groups speaking many languages and dialects. Cambodia has an estimated 36 minority groups, comprising some 4% of the population, while Thailand owns to 9 main ethnic minorities comprising an estimated 1.22% of the population. Laos and Vietnam have the greatest representation of ethnic groups in their populations, with 48 groups and 47.5% of the population in Laos, and 54 groups accounting for some 14% of the population in Vietnam[25]. Map B.4 shows the distribution of ethnic minorities in the LMB as a percentage of provincial population.

As no data for Cambodian ethnic minorities was included in the MRC Social Atlas, a map from the Cambodian NGO Forum is reproduced below indicating the distribution of different ethnic minorities in the country. This indicates that three main ethnic groups, Kui, Punong and Kachak, may fall in the impact areas of the mainstream dams proposed for Cambodia.

[25] "Status of Ethnic Minorities in the Mekong Region," Asian Development Bank, no date, PPA2, Lao PDR, 2006, National Statistics Centre & ADB, Cambodia, PPA of the Tonle Sap Basin, Project No. 37250 (TA4283), ADB 2007,

Map B.3: Ethnic minority groups as a percentage of total population

Map B.4: Indigenous peoples of Cambodia



Source: NGO Forum on Cambodia, based on preliminary analysis of key informant interviews, "Indigenous Peoples in Cambodia", April 2006

All LMB countries, with the exception of Thailand, guarantee equality of status and citizenship to ethnic minorities under their respective Constitutions and are signatories to international covenants, including the UN "International Covenant on Economic, Social and Cultural Rights". Additionally, Cambodia, Vietnam and Lao PDR now legally recognise collective land rights of ethnic groups. None,however, are signatories to ILO Convention 169 "Concerning Indigenous and Tribal Peoples in Independent Countries" (see Table 1.2).

A history of wars in the region, recent population growth, improved living standards, and national compulsory relocation policies, have all contributed to the re-distribution of many ethnic groups away from their ancestral lands, and still tend to influence national policies. Ethnic minority groups still tend to live in remote and marginal areas and are often less able to access health and education services than the national majorities[26].

Numerous reports[27] note the following trends in LMB countries which are affecting the overall poverty and health status of ethnic minorities:

- remote areas have proportionately smaller acreage of cultivable land and poorer soil quality, leading to limited access to cultivable land, especially for rice production
- reduced funding for health and education affects remote areas disproportionately
- efforts to eradicate swidden cultivation impact upon ethnic minorities who depend more on such cultivation techniques

[26] "Social Atlas of the Lower Mekong Basin", MRC, March 2003, p. 9

[27] ADB, op cit, Lao PDR PPA op cit, Cambodia PPA op cit

- political history of the region still influences policies and social relations in LMB countries
- migration within countries and across borders often involves people from diverse ethnic groups, whether for work migration or for human trafficking
- national compulsory relocation programmes target remote communities in order to transfer populations without basic infrastructure (e.g. roads, schools, health clinics) to areas where it can be provided
- ethnic minorities tend to be more livelihood-reliant on natural resources, and are therefore subject to adverse impacts of loss of such resources (e.g. deforestation, contamination of water resources through mining activity, etc.)
- highland areas do not experience the same level and rates of economic growth as lowland areas
- HIV/AIDs poses a special threat to ethnic minorities – there is evidence it has entered several highland communities in Thailand
- poor human capital (i.e. lack of education, poor health, poor nutrition, higher infant mortality and morbidity, higher maternal mortality and morbidity, etc.) are directly associated with higher poverty status

Despite improvements in national trends and decline in poverty of ethnic minorities, some observers of LMB countries[28] suggest that conditions for ethnic minorities in upland areas are worsening, with associated impacts on health, mortality rates and life expectancy. Reasons cited include policies to reduce swidden cultivation, assignment of land to foreign concessions which limits rotational areas, and population relocation. This puts added pressure on Mekong river riparian land, which is among the most agriculturally productive in all countries. Riparian landowners not only have to deal with loss of cultivable land due to urban growth, but also due to sequestration of land for foreign concessions and to accommodate population growth resulting from compulsory relocation and natural migration.

For Laos with the largest proportion of ethnic minorities in its population, the relationship between ethnicity and poverty, as well as between gender and poverty, is demonstrated by indicators shown in Table 1.4.

The same source shows that poverty by relative altitude in Lao PDR is confirmed, with a poverty headcount of 28.2% of the lowland population (57.5% of the population) in contrast with a poverty headcount of 43.9% of the upland population (25% of national population). The same feature is reflected in Vietnam, which also recognises that mountainous, border and ethnic-minority density areas are comparatively poorer and more disadvantaged that other regions and groups[29]. However, ethnicity in Lao PDR does not appear to be a statistically significant predictor of per capita expenditure, after controlling for other factors[30].

[28] cf Chamberlain, Lao PDR PPA, op cit, "Using Traditional Swidden Agriculture to Enhance Rural Livelihoods in Vietnam's Uplands,", Tran Duc Vien, Stephen J. Leisz, Nguyen Thanh Lam, A. Terry Rambo, Mountain Research & Development, Vol. 26, No. 3, August 2006, 192-196

[29] Socialist Republic of Vietnam, "The Five Year Socio-Economic Development Plan, 2006-2010", ratified by the National Assembly, July 2006

[30] The Geography of Poverty and Inequality in the Lao PDR, Michael Epprecht, Nicholas Minot, Reno Dewina, Peter Messerli, Andreas Heinimann, Swiss National Centre of Competence in Research (NCCR) (North-South), University of Bern, and IFPRI, Bern, Switzerland, 2008, p. 19

While upland communities in Thailand do indeed rank among the poorest and upland northern provinces featuring as among the worst performers on health, education and human achievement indices[31], several provinces in the largely Lao-speaking populations of Thailand's northeast are also low on the scale of poverty reduction by comparison with other provinces.

Table B.4: Statistical patterns of poverty relating to ethnic groups in Lao PDR

Total Lao PDR	% of National Population	Incidence of Poverty Headcount Index (% of pop.)
	100	33.5
Geographic Area		
Urban	23	19.7
Rural	77	37.6
Ethnolinguistic Family		
Lao-Tai	66.6	25
Mon-Khmer	20.6	54.3
Hmong-Iu Mien	8.4	40.3
Chine-Tibet	3.3	45.8
Other	1.1	48.4
Gender of Household Head		
Male	94.9	31
Female	5.1	28

Source: Table 1, Participatory Poverty Assessment 2 (2006), Lao PDR, National Statistics Centre, ADB, J. Chamberlain

For many ethnic minorities in all LMB countries, changes in land policies and legislation have over time detached people from many customary practices, land use and resource management that supported rural communities, ensured food sufficiency, and enabled a level of ability to meet basic material needs[32]. The practice of resettling poor and remote villages to be near urban centres and transportation networks to benefit from concentrated service delivery and commercial production is still a policy in Lao PDR and Vietnam explained in terms of poverty alleviation, defining poverty reduction in terms of physical access to infrastructure and facilities. This definition of poverty indicator deserves re-examination, particularly in light of re-evaluation of where poverty is growing in relation to erosion of the natural resource base[33].

Change to land and resource rights in Cambodia is one example where the culture and traditions of ethnic groups are under threat[34]. Coupled with rapid urban development, this is reported to have

[31] National Human Development Report 2007, Thailand

[32] "Study on Women's Land and Property Rights Under Customary or Traditional Tenure Systems in 5 Ethnic Groups of Lao PDR", Elizabeth Mann, Ny Luangkhot, Land Policy Study no. 13, Lao-German Land Policy Development Project, GTZ, May 2008

[33] "The Millenium Development Goals: Progress in Asia and the Pacific 2007", op cit

[34] Cambodia Human Development Report 2007, "Expanding Choices for Rural People", Ministry of Planning & UNDP Cambodia

been a prime cause of the increase of land-related conflicts in the country. As demand for land increases, so tensions arise in proportion to the lack of law enforcement. Inevitably issues of land acquisition in Mekong river riparian areas for construction and operation of the proposed 11 mainstream dams, whether of ethnic minority ancestral domains or of majority population landowners, will bring its own issues, which are further discussed under Topic 3.

2.1.5 MEKONG CULTURE

The Mekong river is more than a body of water to the people living along its banks, and it feeds not only the body, but the soul and spirit of the Mekong communities. Apart from long-established livelihood dependence, transportation access and water supply, it has strong cultural associations with people of the LMB nations. In both Laos and Thailand, the Mekong river is said to be home to the Phaya Naga, mythical serpent-like creatures who live in the stretch between Vientiane and Ubon Ratchathani. The Naga is particularly important to Lao iconography, and features prominently in the culture of all Lao. Traditionally it has been the spirit protector of Vientiane, and by extension, of the Lao state.

The Phaya Naga is said to live in other stretches of the Mekong also, such as at the confluence of the Nam Kading river to the Mekong, where every year people drown in the strong currents. Travellers on the road to Thakhek throw small offerings of snacks and cigarettes into the water to appease the water spirits and to ensure a safe journey. In Thailand, the spirit of the Mekong river and the Naga were invoked by local communities, as well as a group of senators, in a ceremony at Samphan Bok (three thousand holes) to solicit their protection of their lives and the lives of river species in the face of impending decisions on dam construction in the area.

Festivals are annually held up and down the length of the Mekong river, mostly linked to agricultural seasons or Buddhist holidays. Thanks is given by local communities to the spirits of the land, trees and water, for allowing crops to flourish, fisheries to provide food, and protection for the lives of both the living and the dead. The most memorable of these are the boat racing festivals (bun suang heua) in Laos and Thailand, held not just on the Mekong but on tributary rivers throughout the countries, and the fireball phenomenon, variously explained by both spiritual and scientific origins. In Cambodia, the importance of the river and of the Tonle Sap, fed by the Mekong, was celebrated by the Festival of the Receding Waters, marking the reverse of the Tonle Sap River and the time when the land could be returned to cultivation and commercial fishing could start again.

The banks of the Mekong river and its tributaries have lent themselves for centuries to spiritual contemplation, resulting in many temples and sacred trees being sited on points which afford unparalleled views across the river. 'Thon sai' trees are hardwood trees common to temple grounds, and like most large trees in Thailand, Laos and Cambodia, are believed to have a soul or resident spirit. Many of the temples traditionally cultivate gardens with medicinal herbs which are used to treat illness of local villagers. Stands of spirit forests are closely associated with the spiritual welfare of individual villages and different ethnic groups, and their decrease through commercial development is one of the great cultural losses of LMB countries.

The longevity of human history along the Mekong river is reflected in archaeological sites such as Pa Taem, near the confluence of the Moon river on the Thai side. Rock paintings dated to more than 3000 years previously, of elephants, turtles, fish and fishing tools, have been found on the high cliffs

here near the mouth of the Moon above the Mekong valley. At Kaeng Saphue, the rapids some 40 kilometres upstream of the Moon, remnants of ancient Hindu culture have been discovered, thought to be evidence of a civilisation called Chenla existing around 650CE.

The physical beauty of many locations up and down the Mekong river is well recognised and have been well exploited for livelihood purposes, whether for subsistence livelihoods or tourism. The Khone falls in southern Laos, where the proposed Don Sahong dam will be sited, is known locally as Lee Pee, or 'spirit trap'. Here bad spirits of dead people and animals are trapped as they wash down the river and are prevented from mixing and merging with the good spirits of the Mekong mainstream river. Local fishermen have apparently come to an accommodation with spirits trapped by the Lee Pee, and the area is an important source of seasonal fisheries to a large number of people.

2.1.6 LIVELIHOODS AND THE NATURAL RESOURCE BASE

Agro-ecological conditions of the different Zones influence both the types of livelihood that can be sustained, as well as the distribution of ethnic groups which follow different livelihood options. Most provinces adjacent to the Mekong river are agro-ecologically lowland, and the ethnic composition of their populations reflect a primarily settled agricultural economy, particularly from Zones 3 onwards. Zones 1 to 2 (from the Chinese border to Chiang Saen, and from Chiang Saen to Vientiane) are initially more mountainous with steep elevations falling to the Mekong River, gradually flattening out the closer the river moves towards the Vientiane plain. Communities in these areas consist of more scattered, discrete hillside and river valley villages, more populated by minority ethnic groups traditionally heavily reliant on subsistence production and livelihood diversification depending mainly on natural resource use (e.g. non-timber forest products [NTFPs]) and traditional agricultural techniques (e.g. swidden cultivation).

Zones 3 to 4 (Vientiane to Pakse, and Pakse to Kratie) form what is known as the Mekong Corridor, with flattened elevation and settled agriculture, whose populations depend on a mixture of both market and subsistence economies. Part of the Vietnamese Central highlands are located by the MRC within Zone 4, though they are well away from the Mekong mainstream. The further down the mainstream, the higher the reliance of riparian communities on fisheries for income. Zone 5 (Kratie to Tonle Sap) communities are perhaps the most heavily dependent on fisheries as the central plank of their livelihoods, while Zone 6 (Mekong delta) supports a dense population base heavily dependent on water support intensive agriculture.

As the bulk of the Mekong riparian population is rural and mainly agriculturally dependent (whether in its subsistence form, market economy form, or a combination of both), the importance of natural resources is paramount to the livelihood base. This can be seen by the proportion of case study provincial households cultivating agricultural land (Table B.5). Provincial-level data, as well as that from district-level (Section C), demonstrates that agro-ecological zoning does not necessarily meet the realities of life in different countries, and that a combination of assessment models need to be applied, including differences between countries which reflect national disparities in infrastructure availability, national development strategies, national development opportunities, and peoples' livelihood choices.

Table B.5 shows that Cambodia and Zone 4 has the highest dependence on agriculture for livelihood. Laos follows a close second with higher dependence in the more mountainous areas but agricultural

dependency reducing in Zone 3. Household land parcels are very small, and less than 3has per household in Laos and Cambodia. By contrast, Thai case study provinces in both Zones 2 and 3 have a much lower agricultural dependency, though higher average household landholding, indicating both greater alternative livelihood opportunities as well as better economy of scale for landholdings.

Table B.5 : Lao, Thai, Cambodia case study provinces: percentage households cultivating agricultural land and average landholding size

MRC Zone	Country	Affected Riparian Province	% hhs cultivating agricultural land	Average size of agricultural land per hh (has)
Zone 2	Lao PDR[1]	Oudomxay	83.8	1.71
		Xayaboury	83	1.68
		Bokeo	72.6	1.39
		Luang Prabang	77.7	2.26
	Thailand[2]	Chiang Rai	38.73#	15.6 **
Zone 3	Lao PDR[1]	Vientiane	70.5	2.92
		Champassack	65.7	2.1
	Thailand	Ubon Ratchathani	53.2 *	26.9 **
Zone 4	Cambodia[3]	Stung Treng	100	1-<3
		Kratie	91	<1

Sources: Lao PDR Population & Housing Census 2005, Tables 8.1-8.3; Thailand Population Census 2000 Key Indicators & Preliminary Results Table 2; Ubon Ratchathani Provincial Agricultural Office 2008: Chiang Rai Agricultural & Cooperative Office 2008; Cambodia National Institute of Statistics 2004, Provincial Food Security Profiles for Kratie and Stung Treng

These data are confirmed by Lao and Thai national team findings on livelihood sources for case study provinces (Annex 2, Table 2.9). Non-Farm employment is a more important source of livelihood for both Chiang Rai and Ubon Ratchathani than is agriculture. The importance of fisheries in terms of importance for cash income is reported to be negligible compared to land-based livelihood dependency in all Lao/Thai case study provinces. These data are supported at district level also (see Section C).

However, low income dependency on certain natural resources, particularly on fisheries, does not mean low subsistence dependency. Much of the land and water resources are viewed by riparian communities as "free" resources, on which they draw to provide a varied and diversified livelihood resource base. Thus while fisheries for income purposes may figure quite small in the lives of Lao and Thai communities, they figure very high indeed in terms of nutritional intake, with heavy reliance on daily catches of fish as well as other aquatic animals and plants for daily food. Fisheries, however, form a much more important livelihoods income source for Cambodian riparian communities, particularly in the Tonle Sap, where an estimated 14% of surveyed households defined their main occupation as fishing[35].

[35] MRC SIMVA Regional Report, November 2009

When different forms of livelihood are associated with different ethnic identity, Zonal differentiation is useful up to a point. Some provinces in the upper Mekong region have higher ethnic minority populations, including the Lao and Thai riparian provinces of Zones 1 and 2, but also some lower Mekong provinces such as Stung Treng (Cambodia)[36]. The vast majority of the riparian population is, however, Lao/Thai or majority Khmer and Vietnamese. However, the most important point to make is that irrespective of ethnic identity, the level of dependence on natural resources, whether land-based or aquatic, determines the impact of any changes imposed on riparian communities, and the level of vulnerability of these riparian communities will determine the scope of these impacts.

While Mekong river resources are vital for livelihoods and cultures of all its riparian communities, the cultural identity of some ethnic groups are more closely interwoven than others with its water resources. In Thailand and Laos, the life of the Lua is intimately associated with water resources. Their daily meal consists mainly of fish and other aquatic animals such as crabs, shrimps and other shellfish. Some clans within the Lua community had the privilege of using these water and fish resources more than others, a customary rule so strong that members of other Lua villages, or from other clans, were not permitted to poach on these resources which were handed down from generation to generation. Breaches of this rule could lead to serious conflict[37]. Land, fish and water resources privileges among the Lua were associated with authority and hierarchy, and with the right to recruit corvee labour.

According to a recent situation analysis of Stung Treng province, there are 14 named ethnic groups, most of whom identify themselves as *Nek Srok Lue* (uplanders), referring to the upper part of the Mekong river in Cambodia rather than to hill dwellers. One ethnic group in particular, the Cham (Muslim Khmer) is almost totally dependent on fisheries for their livelihoods, and as such, have developed a range of fishery skills and knowledge superior to other ethnic groups. They tend to be semi-nomadic, travelling to Stung Treng with the onset of the rainy season[38].

In Stung Treng province, the site for the Mekong mainstream dam is right where the Mekong river with three major tributaries, the Sekong, Sesan and Sre Pok. The confluence of these rivers has created a vase wetland ecosystem rich in biodiversity, on which an estimated 90% of the provincial population is dependent[39]. There are both permanent and temporary settlements, some seasonally established to take advantage of the annual fish migration, and some increasingly permanent and populated by landless people from other parts of the province.

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[36] Indigenous Peoples of Cambodia, ADB no date,

[37] Cholthira Satyawadhna, "A Comparative Study of Structure and Contradiction in the Austro-Asiatic System of the Thai-Yunnan Periphery", in Gehan Wijeyewardene (ed.), "Ethnic Groups across National Boundaries in Mainland Southeast Aisa", Social Issues in Southeast Asia, Institute of Southeast Asian Studies, Singapore, 1990

[38] Thuon Try and Marcus Chambers, "Situation Analysis: Stung Treng Province, Cambodia", UNDP, IUCN, MRC GEF-funded programme, Mekong Wetlands Biodiversity Conservation and Sustainable Use Programme, 2006

[39] David Allen, William Darwall, Mark Dubois, Kong Kim Sreng, Alvin Lopez, Anna McIvor, Oliver Springate-Baginski, Thuon Try, "Integrating people in conservation planning: an integrated assessment of the biodiversity, livelihood and economic implications of the proposed special management zones in the Stung Treng Ramsar Site, Cambodia", IUCN Species Programme, 2008

Most proposed mainstream dams located on central and lower stretches of the LMB (from Pak Chom) would mainly affect majority Lao-Thai communities, while dams along the upper reaches could affect land, fisheries and associated natural resources of ethnic groups traditional to the area, including Khmu, Tai Lao and Hmong (Pak Beng, Luang Prabang, Xayaboury, Pak Lay). Maps from a 2008 socio-economic atlas of Lao PDR [40] show the Lao distribution of ethnic groups along the Mekong river, clearly illustrating that the bulk of the river's riparian population belongs to the majority Lao-Tai category, except in northern provinces, where typically upland subsistence farming groups, such as the Mon-Khmer and Hmong-Mien, predominate. Coupled with their higher vulnerability rating over lower human capital levels, this would result in such ethnic minorities being more vulnerable than others to changes in the riparian natural resource base.

2.2 TOPIC 2: HEALTH AND NUTRITION

2.2.1 LMB POLICIES AND TRENDS

MDG health and nutrition indicators have shown gradual improvements in the LMB over the past 20 years or so (Table B.6). Thailand has removed the MDG relating to clean water supply and sanitation from its targets, having achieved almost universal clean water supply and sanitation by 2007. However, the remaining countries retain this MDG and have some way to go to achieve these objectives.

Life expectancy and children's health are important measures of quality of life and significantly affect a country's ability to be economically productive. Progress in improving health conditions is an important indication of their importance in national strategies. Problems remain, due either to under-funding, ignorance, access, or customary practices which may increase vulnerability to food insecurity and to health threats.

Improvements reflect advancements in primary health care programmes, surveillance programmes, and socio-economic improvements, leading to better nutrition, sanitation and health services. However, there remain some gaps which continue to give rise to concern. The relatively poor access to sanitation in Lao PDR and Cambodia, for example, may be an issue when looking at the situation in Mekong river riparian provinces and districts, which could be affected by overall rises in groundwater levels in locations adjacent to the Mekong river as a consequence of dam operations, in turn leading to greater potential health risks to populations in impact areas. In general, Cambodia and Lao PDR have demonstrated the slowest progress towards achieving all MDG goals.

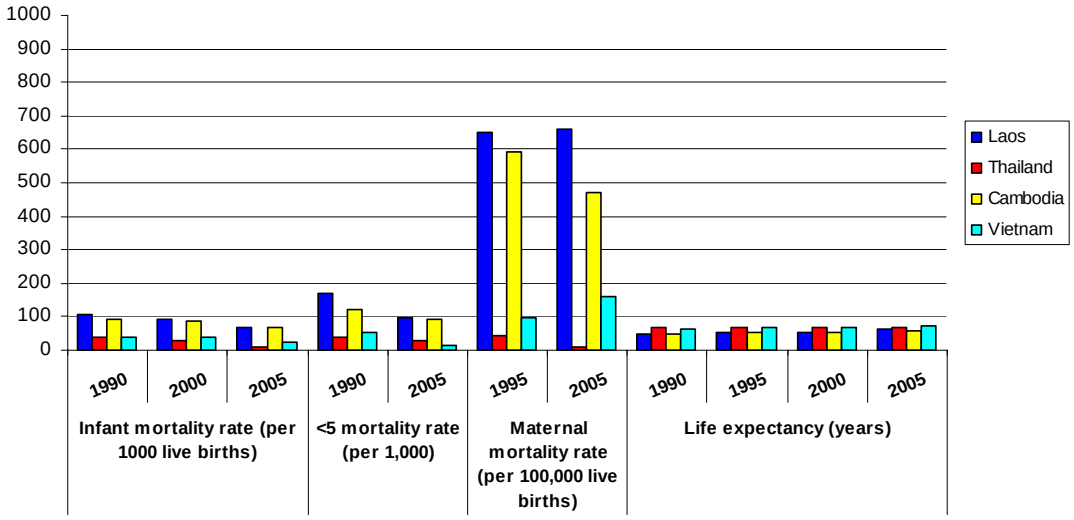
Despite progress, MDG monitoring reports indicate that about one third of MDG's measurable trends show slow or no progress at all[41]. Cambodia shows no progress or even regression particularly on

[40] Messerli, P., A. Heinimann, M. Epprecht, S. Phonesaly, C. Thiraka, N. Minot (eds), "Socio-Economic Atlas of the Lao PDR: An analysis based on the 2005 Population & Housing Census", Swiss Centre of Competence in Research (NCCR) North-South, University of Bern, Bern & Vientiane, 2008

[41] "Development Aisa", Year II, No. V, October- December 2009, Asian Development Bank, Data Asia-Pacific MDG Study Series, "The Millenium Development Goals: Progress in Asia and the Pacific 2007", (an ESCAP/ADB/UNDP project), www.adb.org/Documents/Reports/MDG-Update-2007

Underweight Children (Goal 1) and Child Mortality (Goal 4), while Lao PDR shows regression on the percentage of the population living on less than $1 a day (Goal 1), and Vietnam shows regression on HIV/AIDS prevalence (Goal 6). All LMB countries except Vietnam show regression on Goal 7, Environmental Sustainability, with a very substantial reverse trend in forest cover.

Figure B4: Trends in main MDG key health indicators of LMB countries



Source: World Bank country profiles, UNICEF country information

When provincial statistics from case studies are assessed against national trends (Annex 2, Table 2.6), Lao PDR again heads the league for high infant mortality rates, while both Cambodia and Lao PDR demonstrate a very low proportion of provincial health facilities, such as hospitals, compared to Thailand. Interestingly however, Ubon Ratchathani shows comparatively high levels of child wasting (higher than Lao PDR and Cambodia) as well as of child malnutrition, reinforcing the concern expressed by Thailand that while the Kingdom's overall health status remains high in comparison to other LMB countries, pockets of poverty persist in several parts of the country.

Ethnic minorities experience significantly poorer health status than members of the majority population in all LMB countries. This is partly due to the often remote areas in which they live and relative inaccessibility of health facilities, to overall lower educational levels particularly among women, to lower standards of sanitation and hygiene, to different languages which make public communication on health messages a greater challenge, and to significant loss of the variety of natural resources from which ethnic groups obtain diverse food sources. Intestinal parasitic infections are endemic, contributing to high levels of stunting and wasting among children.

Table B6: Trends in main MDG key health indicators of LMB countries

	Est. HIV prevalence rate (% ages 15-49)*		No. children orphaned by HIV/AIDS		Incidence of TB (per 100,000 persons)		% population with access to clean water source		% population with access to improved sanitation	
LMB Countries	**1999**	**2007**	**1999**	**2007**	**1999**	**2007**	**2000**	**2006**	**2000**	**2006**
Laos	0.1	0.2	280	ND	171	ND	90	60	46	48
Thailand	2.3	1.4	75,000	ND	141	ND	80	98	96	96
Cambodia	3.5	0.8	13,000	ND	560	ND	30	65	18	28
Vietnam	0.1	0.5	3,200	ND	189	ND	56	92	73	65

* 1999 figures relate to females only, and between ages 15-24
Sources: World Bank & UNICEF country profiles

Other changes are happening which mean that while national progress has made forward steps, there are other pressures which result in backward steps also. For example, Vietnam had the lowest rate of HIV/AIDS infection amongst 15-49 year olds in the world, but the infection rate has increased from 0.1% to 0.5% in ten years. The rate in Lao PDR, while still small, has doubled in the same period. Rates may be higher than acknowledged as people either do not know they are infected, or are afraid to acknowledge it, fearing the social stigmatisation that often follows. Thailand has the highest HIV prevalence rate, a risk internally, as well as for migrants from other countries. For those LMB countries experiencing an influx of migrant workers or which are able to take advantage of the closer commercial links between neighbouring countries through infrastructure improvements, the risk of disease transmission is elevated. Greater access to markets, skills, technologies and products, also carries associated risk of increase in sexually transmitted diseases, trafficking of women and children, and greater pressure on often already limited health facilities.

Public expenditure on health in countries in the LMB is variable, Table B.7 shows the extent of general government expenditure on health as a percentage of total government expenditure in 2005, as well as the per capita expenditure. Thailand has both one of the highest percentage of government expenditure as well as per capita expenditure. Cambodia has the highest percentage of general government expenditure, but one of the lowest per capita figures.

Table B.7: Public expenditure on health in LMB countries

	2005	
LMB Countries	General govt. expenditure as % of total govt. expenditure	Per capita govt. expenditure ($)
Laos	4.1	16
Thailand	11.3	207
Cambodia	12	41
Vietnam	5.1	57

Source: WHO Statistical Information System

2.2.2 WATER, GROUNDWATER, AND SANITATION

In relation to safe water and sanitation access, seasonal variations in groundwater levels and poor drainage conditions create circumstances where infections and insects can thrive, particularly in the rainy season. Seasonal fluctuations in rates and types of disease linked to poor water quality, drainage and sanitation, are common in all the LMB countries, with complaints such as respiratory disease, coughs, colds, diarrhoea, malaria and dengue, increasing during the wet months between July and October.

Any alterations to groundwater flows and levels in Mekong river riparian areas caused by the proposed mainstream dams would consequently result in proportionate health and livelihood risks associated with elevated groundwater, increased drainage problems, and greater potential to damage land and property through saline intrusion. The northeast of Thailand already suffers from this problem, mainly attributed to natural attributes exacerbated by deforestation and irrigation development[42]. This risk is elevated in proportion to type of riparian terrain – the flatter the riverbank and more prone to seasonal flooding, the greater the risk. Risk can therefore be potentially higher in Mekong downstream areas than in the upper LMB. This topic will be explored in more detail with case studies. Initial data (Annex 2, Table 2.7) indicate very low proportions of households in Laos and Cambodia with access to safe drinking water and sanitation. In provinces located further downstream, such as Champassack (Lao PDR) as well as Stung Treng and Kratie (Cambodia), some 28% or less of provincial households have access to sanitation, and more than half the population have access to clean drinking water sources, representing high risk areas for disease transmission due to flooding or elevated groundwater levels.

The incidence of vector borne disease is also higher in downstream Mekong river areas. A situation analysis of Stung Treng province, Cambodia[43] emphasises that poor access to clean water supply is believed to be responsible for the high incidence of intestinal diseases, while the area has the highest incidence of malaria in Cambodia, though it notes that this is more common in higher land away from the Mekong. Schistosomiasis and filariasis also occur in provinces along the Mekong river, such as in Ubon Ratchathani (Thailand), Champassack (Laos), and Stung Treng (Cambodia).

Arsenic in groundwater is also a little-known phenomenon in Cambodia and Vietnam, as well as in southern provinces of Lao PDR. A risk assessment was carried out by the World Health Organisation (WHO)[44], which identified arsenic contamination of groundwater in the Vietnam Mekong river delta, as well as in approximately 1600 villages in 6 provinces in Mekong river floodplains (Map B.5). The report indicated uncertainties in the number of people potentially currently affected in Cambodia, as well as the degree of exposure. Laos was also affected but in a very small way compared to Cambodia and Vietnam, and exposure in Mekong river riparian areas has not been identified.

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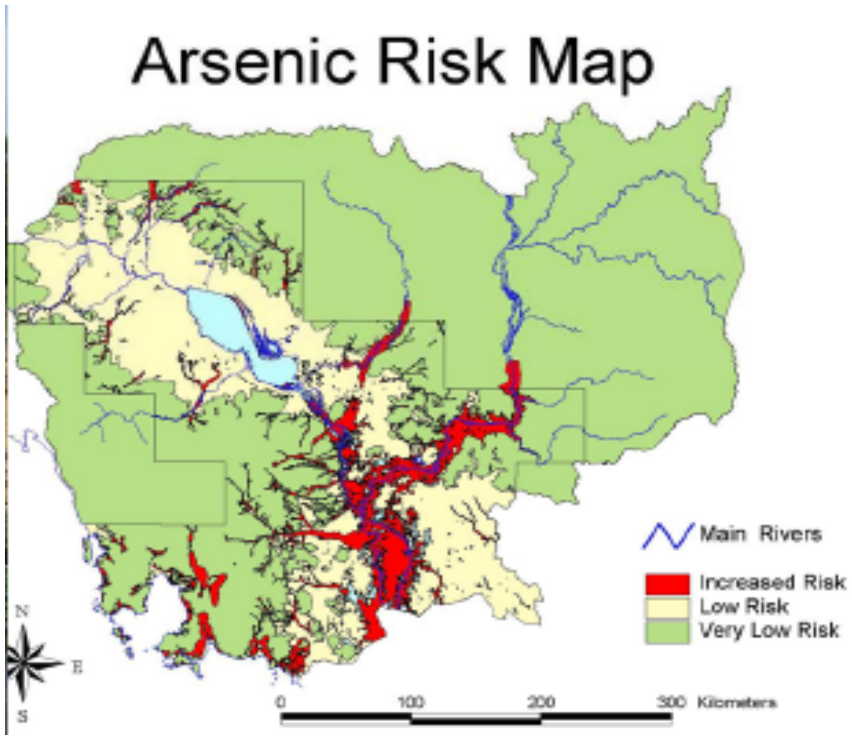
[42] Judy Eastham, Freddie Mpelasoka, Mohammed Mainuddin, Catherine Ticehurst, Peter Dyce, Geoff Hodgson, Riasat Ali, & Mac Kirby, "Mekong River Basin Water Resources Assessment: Impacts of Climate Change", Water for a Healthy Country Flagship Report Series ISSN: 1835-095X, CSIRO, August 2008

[43] Thuon Try and Marcus Chambers, op cit

[44] "Research needs for household level treatment to remove arsenic and fluoride in drinking water in S. E. Asia", David Fredericks, WHO, no date (2008-09)

Map B.5: Arsenic risk map in Cambodia



Source: David Fredericks, WHO op cit

The Mekong river changes rapidly in Cambodia and Vietnam in response to river stage, erosion or deposition of sediments. Groundwater arsenic contamination is strongly correlated to these features. Land use changes or changes in groundwater flows, can result in arsenic intrusion into areas where no prior contamination occurred. Changes in river water levels (e.g. from elevated headponds) can cause a significant change in groundwater flow directions, and thus induce migration of contaminated groundwater in a new, formerly non-contaminated area. This could pose a major health threat to affected populations.

Where groundwater levels are affected by hydropower (e.g. Pak Mun, Thailand), saline intrusion and waterlogging have become apparent. The northeast of Thailand is particularly seriously affected by saline intrusion, exacerbated by very severe loss of forest cover as well as by irrigation systems transecting natural groundwater flow directions. Other international rivers (e.g. the Nile) typically experience this problem in relation to hydropower projects[45]. On the Nile River for example, impacts have occurred at construction site as well as both upstream and downstream of dams/barrages. Consequences have included impacts on agricultural choices through restricted rooting depths of many crops, salinisation of soil, shallow water groundwater contamination with risk to increased

[45] For example, both in relation to the Aswan High Dam as well as the New Naga Hammadi Barrage. For the latter, see "Final Report: Engineering & Hydrology Programme, Component: Groundwater", New Naga Hammadi Barrage & Hydropower Plant, Naga Hammadi Barrage Development Consultants, November 2008

domestic water supply and sanitation health, potential increase of vector borne diseases and increased damp damage to buildings. Mitigation measures have included improved drainage programmes and enhanced health monitoring through village water and sanitation awareness programmes.

2.2.3 POVERTY REDUCTION AND FOOD SECURITY

All LMB countries include in their poverty reduction strategies and plans the objective to improve nutrient intake and ensure food security. Food security depends upon: (i) access to natural resources able to provide sufficient quantity and quality of nutrient-rich food intake for households; and/or (ii) ability to purchase sufficient quality and quantity foodstuffs of sufficient nutritional value if they cannot be produced or gathered by a household. National policies and strategies related to health and nutrition have been developed in LMB countries which identify populations likely to experience declines in future food security status due to the effects of a particular hazard or shock. The United Nations World Food Programme defines household vulnerability to food insecurity in the following way:

- Hazard (hazard risk): probability of occurrence of a potentially damaging phenomenon within a given time period and area
- Vulnerability: increased susceptibility of households to the impact of specific hazards
- Risk: probability of harmful consequences, or expected losses (specifically with regards to food security) resulting from interactions between hazards and vulnerable conditions[46]

For the majority of the population living beside the Mekong mainstream river, and dependent on its water and land resources, nutritional intake (as well as household income) is reliant on a wide variety of forest, river, wetland and agricultural resources, consisting of fish, aquatic animals (frogs, snails etc.), aquatic plants (particularly the protein-rich weed called *kai*), insects, wild animals, livestock (cattle, buffalo, pigs and poultry), paddy rice, vegetables grown on riverbank gardens, and in some locations on non-timber forest products such as bamboo shoots, mushrooms, etc.

The social component does not cover livelihood aspects of fisheries, wetlands and aquatic species. However, a review of the nutritional contribution of fish and other aquatic species, as well as of river plants dependent upon clear, silt-free flowing water, is included in this section.

The importance of free sources of nutritional intake cannot be underestimated, particularly in poorer and more remote areas of the Lower Mekong Basin. Different regions have different nutrition characteristics. For example, while severe stunting, wasting and underweight of children due to poor diet is a feature throughout Lao PDR[47], the southern provinces (Salavane, Sekong, Attapeu, Champassack) have the highest incidence among children of underweight (50%), of stunting,

[46] *FOOD INSECURITY & VULNERABILITY INFORMATION & MAPPING SYSTEMS (FIVIMS), THAILAND NATIONAL FIVIMS,* FAO-ASIA FIVIMS TRUST FUND PROJECT, 2002, *COMPREHENSIVE FOOD SECURITY & VULNERABILITY ANALYSIS (CFVSA), LAO PDR, WORLD FOOD PROGRAMME, DECEMBER 2007*

[47] Multiple Indicator Cluster Survey (MICS), "Monitoring the Situation of Women and Children: Lao PDR", Ministry of Planning & Investment, Department of Statistics, Ministry of Health, Hygiene & Prevention Department, United Nations Childrens Fund (UNICEF), Vientiane 2006

characteristic of chronic, long-term malnutrition (46.2%), and of severe stunting (19.3%). However, both Stung Treng and Kratie (Annex 2, Table 2.6) also indicate a high prevalence of provincial stunting, wasting and low weight for age of children. Lack of district data from Cambodia prevents further analysis of whether Mekong river proximity has any influence on this prevalence.

Malnutrition is associated with more than half of child deaths worldwide. Undernourished children are more prone to disease and less able to develop healthy immune systems, they are more prone to faltering growth, and may be more learning impaired than healthy, well-nourished children. It is also linked to poor educational standards of parents, as well as either limited income or limited access to the natural resources needed to provide a well-balanced diet. In Lao PDR, there is also a significantly higher percentage of the effects of malnutrition in highly sloping areas, especially among ethnic minorities. Sino-Tibetan groups, such as Akha, demonstrated the highest percentage of stunting among children (61.9%) as well as underweight children (39.8%), while Mon-Khmer and Hmong-Mien also demonstrated very high stunting rates (55%)[48]. Cambodia also acknowledges chronic malnutrition, particularly in rural areas[49], as does Vietnam, with an estimated 40% of children under the age of 5 being underweight and 38% suffering from stunting[50]. A recent World Food Programme study[51] alarmingly concluded that every second rural child in Laos under the age of 5, is stunted.

However, not just the availability of protein-rich food sources should be considered, but also people's attitude to different types of sources in cultural and social terms, as this strongly influences when consumption of different foodstuffs occur, and why. Consumption of domestic meat, particularly buffalo, may be associated with the acquisition of ritual power, or appeasement of spirits, or for health rituals[52].

When livelihoods are disrupted or natural-resource dependent communities are increasingly removed from traditional livelihood sources, then the incidence of stunting, wasting and associated diseases increases as the food chain is disrupted or cut off. Dependence on wild foods, including aquatic species, is extremely important for both food security and nutritional intake, and cannot be easily substituted by meat from livestock due to problems of storage, transport, land availability to raise livestock, and costs of maintaining domestic animals. Indeed, some nutritional specialists[53] refute the idea that rice insufficiency is the cause of food insecurity in the LMB, rather that it is due to loss of wildlife habitat and resources (not just fisheries) which is eroding the nutrition base and contributing to greater food insecurity.

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[48] Ibid, Figure 1.8

[49] Cambodia Nutrition Country Profile, FAO, 1999

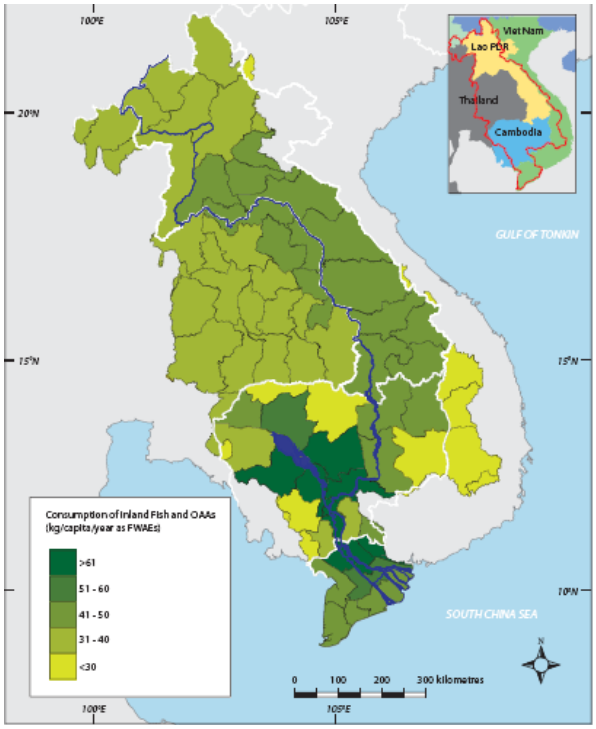
[50] Vietnam Nutrition Country Profile, FAO, 1999

[51] "Lao PDR: Comprehensive Food Security and Vulnerability Analysis", World Food Programme, December 2007

[52] Kirsch, T. 1973. *Feasting and Social Organization: Religion and Society in Upland Southeast Asia*. Cornell University. Ithaca, New York., Condominas, G. 2003. "Safeguarding and Promoting the Intangible Cultural Heritage of Lao Minority Groups". In: Goudineau, Y (ed). *Laos and Ethnic Minority Cultures: PromotingHeritage*. United Nations. Paris, Jutta Krahn & Arlyne Johnson, "Upland Food Security and Wildlife Management", Juth Pakai, Issue 9, Elizabeth Mann & Ny Luangkhot, 2008, op cit

[53] Jutta Krahn & Arlyne Johnson, ibid

Map B.6: Distribution of per capita consumption of inland fish plus OAAs, by province



Source: "Consumption and the yield of fish and other aquatic animals from the Lower Mekong Basin", MRC Technical Paper No. 16, October 2007, Figure 1

This factor is confirmed by a recent MRC study[54] which notes that proximity to the Mekong mainstream is also essential to dependency levels on the river's ecosystem. This was particularly noted in areas such as northern Laos, where the topography shows steep land elevation from the river bank, and upland communities living less than 15kms from the Mekong river showed little or no use of its aquatic resources. By contrast, the study notes that where the topography makes the Mekong river more accessible, as in the Tonle Sap in Cambodia, people travel considerable distances each year to profit from the seasonal fisheries opportunities. Thus a combination of easy access with proximity are determining factors of the extent of use of the Mekong river's aquatic resources.

Inevitably in many riparian provinces, Mekong mainstream communities depend heavily on fisheries and aquatic food sources for both consumption and livelihood, compared with communities at a distance from river sources. While the sources of these fisheries and aquatic foods are varied, the most important is the Mekong river, accounting for an approximate 37% of riparian communities' fisheries and 39% of the Tonle Sap fisheries alone[55]. Any changes to these resources would have severe consequences for riparian communities' protein intake, food security and overall health status.

[54] "Integrated Basin Flow Management, Progress Report", Social Assessment Team, Mekong River Commission Water Utilization Program/Environment Program, June-August 2007

[55] Mekong River Commission, SIMVA, November 2009

Map B.6 indicates fish consumption levels in the LMB, which reflects this reliance. Wild fisheries are among the most important sources of protein for riparian communities. Some estimates[56] put consumption of wild inland fisheries in Cambodia at 32.3kg per person per year, and an additional 4.5kg per person per year of other aquatic species. In Laos, the estimate is 24.5kg per person per year.

A recent study by the World Food Programme (WFP)[57] stresses the importance of wild foods in general, and wild fisheries in particular, for ensuring food security particularly among vulnerable groups. Approximately 81% of Lao respondents in this study reported consuming river fish, and 55% consumed other aquatic animals. The same study also pointed out that domestication of animals and fisheries cannot compensate for the protein loss of wild food sources: "wild meat and fish sources are more important as protein and fat sources than domestic meat and fish/aquatic resources"[58]. The most food insecure in Laos were identified as farmers or labourers who seldom fished or hunted, mostly due to loss of natural habitat. Such persons were also commonly asset poor, illiterate or poorly educated, and primarily from non-Lao/Thai ethnic groups.

Risk analysis conducted by the WFP indicates that high numbers of people are becoming increasingly food insecure as a result of several factors. It estimated that only one-third of the population of Laos can currently be considered food secure. Risk factors identified included absence of strong social networks, lack of assets, lack of savings or ready cash, unavailability of natural resources (either through habitat destruction, relocation or degredation and contamination), regularity and frequence of external shocks (e.g. epidemics, floods, landslides, droughts). Inevitably, changes to natural resources are already having substantial impacts on people's food security levels, whether these changes are natural (rising saline intrusion in the Vietnamese Mekong delta) or man-made (loss of wetlands through capturing for agricultural production, domestic and commercial waste discharge into river systems), or through over-exploitation of existing resources (illegal fishing methods, poaching).

Commercial, livelihood and species aspects of fisheries are addressed under a separate section in the SEA. But not just Mekong fisheries are in question here; blasting of falls and rapids in upper reaches of the Mekong river to facilitate large river transport has already created increased water velocity and more water level variability. Impacts recorded in Chiang Khong province (Thailand) for both Thai and Lao farmers have included loss of fish breeding locations, higher dry season river flows which introduce unpredictability for farmers cultivating dry season riverbank gardens, erosion of riverbanks, and increased turbidity which destroys protein-rich wetland plants and freshwater algae [such as *kai* which rely on clear water flows and are cultivated for household consumption, and constitute an important source of income particularly for women] and undermine the seasonal livelihood base.

[56] Ken Hortle, "Consumption and the yield of fish and other aquatic animals from the Lower Mekong Basin", MRC, Techincal Paper No. 16, October 2007

[57] "Lao PDR: Comprehensive Food Security and Vulnerability Analysis", World Food Programme, December 2007

[58] Ibid, p. 15

The whole Mekong river system is already under considerable stress Recent studies[59]. indicate that fisheries are in decline particularly on the Mekong mainstream, with a substantial proportion (one-third) of surveyed populations reporting an average 39% decrease compared to 5 years previously. Vietnam reported the largest decline (48%), with Laos reporting a 41.5% decrease[60]. The most important reason cited for this decline was over-fishing due to fishing practices, including illegal and unsustainable practices. In short, fishing-dependent people blamed themselves for the loss of fisheries.

2.3 TOPIC 3: RESETTLEMENT AND HUMAN TRAFFICKING

2.3.1 RESETTLEMENT, LAND ACQUISITION, COMPENSATION AND MITIGATION MEASURES

The seriousness of the social and political economy of resettlement, as defined above, was recognised by both civil society and national government during the SEA national scoping workshops. It is the only topic where all LMB countries are in agreement as being one of the most important strategic issues facing Mekong river mainstream dam development[61].

During the 1990's international best practice on resettlement evolved rapidly. At the beginning of the decade it was based on the concept of "making sure displaced persons are not worse off after the project than before". In practice, under-achievement meant that this goal was seldom reached. It became clear that to restore living standards to pre-existing levels, the planned target needed to be higher. Consequently, by the end of the decade the preferred concept was to treat the displacement and rehabilitation process as a development project in its own right, aiming to *improve* the living standards of affected people[62].

International standards of resettlement policy and practice, as well as of mitigation measures, now treat resettlement as much more than loss of home and land resolvable through cash compensation. The term "resettlement" has been used for more than 10 years to define the total spectrum of socio-economic impacts of project-induced activities throughout the whole project cycle, including displacement, expropriation of resources which prevent or inhibit people from their livelihoods, loss of cultural, historical and social resources, health risks arising from project activities, to name but a few. In short, "resettlement" has come to mean all stages of risk management planning and implementation before, during and after a project. The full gamut of risks, rights and responsibilities will be further discussed during Phase 3. For the present, the current situation regarding resettlement policies and practice in the LMB is outlined.

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[59] Mekong River Commission, SIMVA, op cit

[60] Ibid

[61] Table 4, SEA Inception Report, p. 26

[62] In 2000, the picture shifted again with publication of *Dams and Development*, the report of the World Commission on Dams. This advocates a transparent process of sharing rights and risks between all stakeholders, and formal transfer of project benefits to affected people.

Activities of dam construction are felt in 4 phases: (i) construction phase, where the dam will require land on both sides of the river for access and physical placement; (ii) impoundment phase, where water levels will rise and potentially inundate riparian land on both sides of the river, as well as create elevated groundwater levels of unflooded land; (iii) operational phase, when dam operation will cause downstream consequences; (iv) de-commissioning or closure.

Several key stages of planning and management are required, associated with the phases identified above, but more importantly including a pre-construction phase, to ensure that social, environmental and livelihood risks are properly recognised, and to enable satisfactory plans to be prepared to ensure that risks are reduced and comprehensively addressed according to international standards. These risks may not only result from planning processes, but may range widely from location to location. Risks are lower in locations where little resettlement is required and few natural resources are affected. Typically this occurs either in locations where few people live or work on affected land, where technical design is adjusted specifically to minimise human impacts, and where technical remedial measures, such as embankments, are constructed thereby avoiding forced displacement. Risk assessment stages include:

- pre-construction planning (socio-economic assessment should be separate from an environmental assessment and employ different skills; this phase also identifies where displacement avoidance or minimisation options can be reviewed and applied)
- construction phase (site impacts include: land acquired for dam, access roads, transmission lines, contractors camps, spoil areas, etc.)
- impoundment phase (upstream impacts include: land and riverbank gardens inundated, groundwater levels elevated, aquatic resources affected, livelihoods de-constructed, uncontrolled immigration, loss of submerged cultural heritage and community assets; impacts also experienced in areas affected by associated facilities, such as transmission lines)
- operational phase (livelihoods reconstruction of displaced people still needed, benefits sharing clarified, downstream impacts include: erosion, aquatic resources affected, loss of riverbank gardens, adverse changes in agro-production systems)

In all LMB countries, responsibility for compensation and mitigation measures is the developer's. The developer must prepare and implement plans in conformity with national laws and policies concerning land acquisition, compensation and livelihood restoration. This requires compliance with the legislation of the primary country with which the developer signs the agreement. All countries also can and do exercise the right of eminent domain over private and publicly held land. However, legal procedures for land acquisition and compensation are normally delegated to local authorities, most of whom tend to apply standards and procedures that fall well short of national requirements.

A variety of policies and legislation are used as reference basis for both expropriation and compensation as a result of projects such as dam constructions. In the LMB, all 4 countries have revised their own national policies and practices to better reflect best international practice (Table B.8). Key improvements in Lao and Vietnamese legislation over the past 5 years include: provision for wider eligibility for compensation, including for those without tenure documentation, increased amounts (and coverage) for transition and moving expenses in relocation i.e. it provides for livelihood stabilization, assistance for affected people (APs) deriving an income from agricultural production who have to change occupation, and 'other' assistance as required for special cases; and requires establishment of resettlement zones with at least pre-project conditions for relocating APs. Table B.9 outlines key differences between different LMB country legislation and best international practice.

However, even where legislation may meet international standards, line agencies at both national and provincial levels recognise that applying such standards regularly falls well short in practice. During consultation with national line agencies, the point was made that there is a tendency to approve projects without willingness or competence to anticipate or require adequate procedures and finances to address problems. Additionally, SEA consultation workshops noted that the process to obtain stakeholder feedback, comments, document approvals, and to apply safeguard frameworks, is often long and time consuming, and easily skipped by those with limited understanding of the relevant legal and institutional framework, and even if understood, know that formal approval of inadequate plans carry no repercussions or sanctions if they are either poorly applied or not even enforced.

The experience to date over social and environmental planning for hydropower in all LMB countries remains variable. During baseline consultation processes, many stakeholders commented on the lack of national experience in effectively managing prior planning processes, and line agencies on the lack of institutional, human and budgetary capacity to plan, implement, and monitor social and environmental planning and mitigation measures. Also noted was the gap between policy frameworks and actual policy application. Stakeholders also pointed out that social impact assessments (SIAs) are often not de-linked from environmental impact assessments (EIAs) during preliminary feasibility stages, although they require very different types of skill and expertise. In some situations, neither upstream or downstream impacts are considered, nor impacts of associated facilities with hydropower, such as rights-of-way, access roads to construction sites, transmission lines and substations. Poor data retrieval can also lead to unreliable assessments of likely social impacts.

In such an environment, hydropower developers may not demonstrate commitment to social and environmental responsibility, or be willing to engage with local communities when unforeseen circumstances arise. In all LMB countries impediments to reaching national standards include:

- Knowledge gap between policy development at national level and implementation at district/provincial levels
- Where land is categorised as belonging to the State, those with land use rights may not be seen as having compensation rights for loss of land
- Compensation calculation for affected assets often remains well under replacement rate
- Budget estimates for environmental and social activities may be pegged lower than actual costs in order to make the investment attractive to national governments
- Limited capacity of line agencies to internalise revised standards and monitor their application.

Table B8: National legislation on land acquisition and compensation in LMB countries

Laos	Thailand	Cambodia	Vietnam
Constitution of Lao PDR, amended 28 May 2003	Constitution of the Kingdom of Thailand, 2007	Constitution of the Kingdom of Cambodia, 24 September 1993	Constitution of the Socialist Republic of Vietnam, April 1992
Land Law, amended 5th November 2003, NA/61/PO	Land Development Act, BE 2526 (1983)	Land Law, No. 197, 20 July 2001	Land Law, 1993 and updated 26 November 2003, No. 13/2003/QH11
Decree 192/PM, on Compensation and Resettlement of Development Projects, 7 July 2005	Land Code, 1954	Sub-Decree No. 25, Council of Ministers, People's Republic of Kampuchea, 22 April 1989	Decree No. 197/2004/ND-CP (December 2004) on compensation, assistance and resettlement when the State recovers land
Regulations for Implementing Decree 192/PM on Compensation and Resettlement of People Affected by Development Projects, 2432/STEA, Vientiane, 11 November 2005	Expropriation of Immoveable Property Act of BE 2530 (1987)	Political Instruction No. 3, Enforcing Instruction on the Principles of Management and Use of Lands, 3 June 1989	Decree No 17/ND-CP (2006), amending Decree No. 197
National Policy on Environmental & Social Sustainability of the Hydropower Sector in Lao PDR, No. 561/CPI, STEA 2006	Ratchaphatsadu Land Act, B.E. 2518 (1975)	Concessions Agreement specific to individual development agreements	Decree No.181/2004/ND-CP (October 29, 2004) on the implementation of the Land Law
Standard Social Obligations in Hydropower Projects, WREA (draft 2009)	Highway Acts of BE 2535 (1992) and BE 2549 (2006)		methods for determining land process for various types of land
Technical Guidelines for Compensation & Resettlement in Development Projects, November	National Housing Authority Act, BE 2537 (1994)		Circular No. 116/2004/TT-BTC, Guiding the Implementation of Decree No. 197, Ministry of
Instruction No. 9/PPC on the Establishment of Village and Village Cluster for Merging Administration, 8 June 2004	Cabinet Resolutions specific to individual development agreements		Circular No. 52/1999/ND-CP (February 1999) on classification of house types
Road Law, 3 April 1999	Concessions Agreement specific to individual development agreements		Decree No. 64/CP (September 1996) on transferring agricultural land to households for long-term use
Water and Water Resources Law, 126/PO, 2 November 1996			Decree No. 45/CP (August 1996) on allowing land use rights to those non-eligible under Decree No. 60/CP
Electricity Law, 34/PO, 31 May 1997			Decree No. 60/CP (July 1994) on property ownership and the right to use urban residential land
Urban Planning Law, 03/99/NA			Grassroots Democracy Decree No. 79/CP-ND (2003)
Concessions Agreement specific to individual development agreements			Concessions Agreement specific to individual development agreements

Table B9: National legislation on land acquisition and compensation compared to best international practice

Key Topics	Best International Practice	National Legislation			
		Laos	Thailand	Cambodia	Vietnam
Avoiding displacement	Avoid displacement by revising technical specifications and/or providing embankments	Mandatory	None	None	None
Scope of impact	Include all affected areas under the scope of impact, including primary construction site and associated facilities such as access roads, transmission lines, upstream and downstream areas, canals, borrow pits, spoil areas,	Mandatory	Partial	Partial	Mandatory
Consultation	Forming compensation and mitigation measures through extensive consultation and participation of affected people	Mandatory	Mandatory	Partial	Mandatory
Asset definition	Comprehensive assessment of all fixed and moveable assets. All assets identified based on full socio-economic survey and asset inventory	Mandatory	None	None	Mandatory
Valuation	Full replacement cost and updated valuations if payments are staggered. Compensation amounts to be based on the findings of the socioe-economic survey, not just on valuation of house and land	Mandatory	Mandatory	None	Mandatory
Choice	Choice of compensation in cash or kind (e.g. cash-for-land or land-for-land)	Mandatory	Cash	Partial	Mandatory
Timing of payments	Before loss of land, assets and resources	Mandatory	None	None	None
Compensation for informal/unregistered land users and asset owners	Those with traditional land or resource use rights, but no formal documentation, are also entitled to compensation and livelihood restoration	Mandatory	None	None	Partial
Special support for the most vulnerable people	Special measures for vulnerable people throughout the project cycle until livelihoods are restored and food security ensured	Mandatory	None	Partial	Partial
Community property and cultural assets	Special arrangements to be made for community property (e.g. common grazing land) and cultural assets (e.g. cemeteries, spiritual sites)	Mandatory	None	Partial	Partial
Livelihood restoration	Compensation not restricted to assets, but also a livelihood restoration programme to be applied	Mandatory	None	None	Mandatory
Gender	Different impacts of projects on men and women taken into account and response measures incorporated into plans	None	None	Partial	Mandatory
Grievance procedure	appeals process fully understood by responsible institutions and affected people alike	Mandatory	Mandatory	None	Mandatory
Human capacity	Ensure adequate E&S technical and institutional capacity to execute E&S plans	None	None	None	Partial
Project opportunities	Priority provided to APs for assistance, e.g. guaranteeing employment by the Contractor	None	None	None	Partial
Health & safety	Preparation of community health programme	Optional	Partial	None	None
Follow-up	A post-construction follow-up programme to address livelihood changes of APs	Partial	None	None	Mandatory
Budgets	Provide adequate budgets fully incorporated into overall project costs	Mandatory	Partial	None	Mandatory
Monitoring	Pay close attention to regular monitoring	Mandatory	None	None	Mandatory
Procedural compliance assessment	National line agencies and/or International Financing Institutions (IFIs) scrutinise pre-construction planning documents to ensure compliance with national or funding agency safeguard requirements	Mandatory	Mandatory	Partial	Mandatory
Host communities	Inclusion of host communities as affected people and therefore entitled to certain compensation and livelihood support activities	Mandatory	None	None	None

2.3.2 COMPULSORY RELOCATION IN THE LMB

Land expropriation in the LMB occurs in several forms and has regional variations. These may include:

1. land acquisition as a consequence of development for national benefit (e.g. road construction, public amenities, hydropower development);
2. land acquisition for major private investment and FDI projects (concessions awards);
3. change of land classification (e.g. from use forest to degraded) to provide land to concessions;
4. relocation of communities to pursue national objectives of reducing shifting cultivation, eradicating opium cultivation, and providing social service;
5. land grabbing by the rich and powerful at the expense of the poor and vulnerable.

The consequences of land expropriation practices in all the LMB countries have subsidiary significance for Mekong mainstream dam development, and may create a state of "double jeopardy". This applies to:

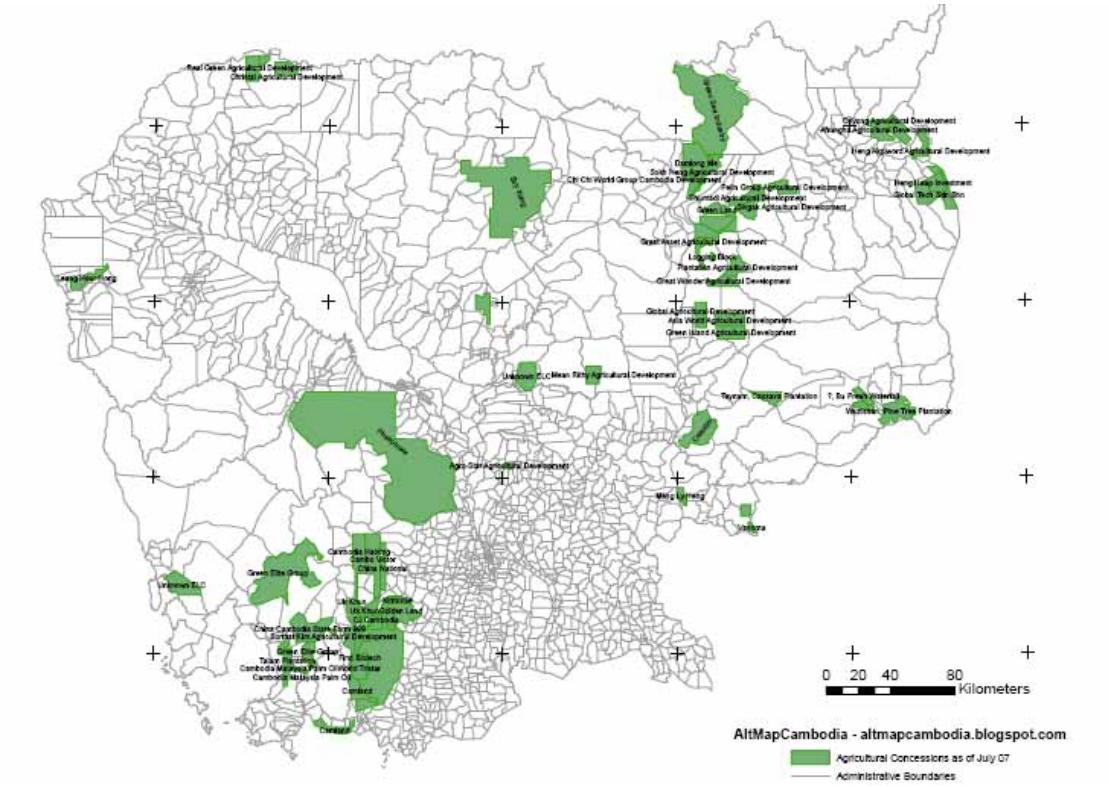
- land users of land expropriated for concessions holders which may be adjacent to the Mekong mainstream river (e.g. in Champassack province, Lao PDR and Stung Treng province, Cambodia), and could fall into the impact zones. There is no policy guideline to compensate concessions holders who have been awarded land already expropriated from its original land users (see Map B.7 which shows locations of agricultural concessions in Cambodia, particularly in case study Stung Treng province)
- communities who have already been relocated under national strategies (e.g Hmong in the Pak Beng impact zone) and risk suffering displacement a second time
- landowners/users along the Mekong mainstream, cultivating land typically among the most agriculturally productive, where land-for-land compensation is unlikely to be viable as it has already been allocated to other interests, or is in such short supply that land of equal productivity and value is unlikely to be available

To address this under hydropower development requires collective, transboundary and coordinated action which seeks a balance between poverty alleviation, economic development, social and ecological integrity.

2.3.3 TRANSBOUNDARY ISSUES FOR THE RESETTLEMENT PROCESS

There are transboundary risks associated with different types and principles of compensation and mitigation measures being applied by different developers in a single country, as well as by any one developer creating impacts in more than one country. The extent of risk depends on (i) whether a developer is willing to change technical design of a dam to minimise impacts; (ii) whether national policies and strategies have a good chance of being applied in practice, not just in principle; (iii) the level of familiarity at provincial and district levels of compensation and mitigation policies, legislation and related implementing procedures; (iv) the ability and/or willingness of national agencies to monitor resettlement and livelihood restoration activities, and ability to insist on changes and/or compliance with agreements; (v) the extent of preparation, competence and budget allocation by the developer to treat resettlement issues with the same professional seriousness with which engineering issues are addressed

Map B.7: Known agricultural concessions in Cambodia



Source: AltMapCambodia, as of July 2007

The issue of resettlement is normally assigned to national policy implementation, and therefore assumed to have no transboundary impacts. This assumption is incorrect with respect to proposed Mekong mainstream dams. There are several reasons for this. The first is the broader definition of "resettlement" that is now applied by international financing agencies, as described above.

Secondly, mainstream run-of-river dams or barrages have land acquisition and livelihood impacts on both sides of the river, as well as upstream and downstream of construction sites. Where the river forms an international boundary, there will consequently be impacts in both countries, and downstream impacts will be experienced across national boundaries.

Impacts are, however, often difficult to determine whether they are national or transboundary. In the SEA's national scoping workshop (July 2009), it was pointed out that current transboundary complaints remain unresolved. For example, Cambodia accuses Laos of downstream problems caused by waste disposal and contamination of waterways by plastic bags. Laos counters these with accusations of its own that Cambodian boats illegally cross boundaries and cause the problem. What this demonstrates is not just that there are grievances, but that there is currently no process or framework in place to deal with accusations and counter-accusations of who is responsible for what. This has implications of transboundary impacts related to hydropower activities.

Potential transboundary risk areas of proposed Mekong river mainstream dams are identified in Table B.10. It has been argued that a cumulative impact will be experienced by Vietnam, above and beyond the stages identified above[63]. Certainly it has been the experience in mainstream river hydropower in other countries that river deltas have experienced problems of increased saline intrusion (cf. the Nile in Egypt) as a result of changed river flows; the extent of associated impacts on Vietnam of dams along the upper and lower parts of the LMB are discussed elsewhere in the SEA[64]. Key transboundary impacts associated with different phases of dam construction primarily occur between Lao PDR and Thailand for construction, headpond and downstream locations, between Lao PDR and Cambodia and between Cambodia and Vietnam, for downstream locations

Table B.10: Mekong river mainstream dams with possible transboundary effects

Country	No.	Dam Name	Transboundary Impacts		
			Headpond	Construction Site	Downstream
Laos	1	Pakbeng	■ ○	■	■
Laos	2	Louang Prabang	■	■	■
Laos	3	Xayaboury	■	■	■
Laos	4	Pak Lay	■	■	■
Laos	5	Sanakham	■	■	■○
Thailand	6	Sangthong Pakcham	■○	■○	■○
Laos	7	Ban Koum	■○	■○	■○
Laos	8	Lat Sua	■○	■○	■○
Laos	9	Don Sahong	■	■	■ X
Cambodia	10	Stung Treng	X	X	X
Cambodia	11	Sambor	X	X	X *

■ Impact in Lao PDR ○ Impact in Thailand

X Impact in Cambodia * Impact in Vietnam

Strategic transboundary issues relating to this topic include:

1. **Variability of LMB country legislation relating to potential social inequity of treatment of Affected Persons (APs).** Each LMB country has its own land acquisition and compensation laws and policies. Some are more comprehensive than others. Although impacts may be the same on both sides of the river, actual compensation and mitigation measures may be different, leading to social inequity in treatment of people affected in the same way by the same project but living on opposite banks of the Mekong river, or living upstream or downstream of the construction site.
2. **International financing safeguard standards.** If any developer seeks financing from an International Financing Institution (IFI) which has either developed its own safeguard policies or subscribes to the Equator Principles, common land acquisition and compensation,

[63] During SEA consultation workshops, Vietnamese government and non-government agencies raised specific concerns about impacts of upstream dams on downstream flow regimes and consequences for flood control, Tonle Sap, and climate change impacts already being experienced in the Mekong Delta. SEA Inception Report, Part B: National Scoping Summaries, 23rd October 2009

[64] See SEA section on Theme 1: Metrology, Climate Change, Hydrology, Water Quality & Sediment

mitigation and livelihood restoration standards are required to be applied to the highest, rather than the lowest, levels irrespective of individual country systems.

3. **Definition of locations deemed affected.** Not every country nor every developer recognises and accepts that mitigation measures, compensation, and livelihood restoration, apply to impacts experienced in all 3 locations outlined above. Most consider the construction site and land lost to impoundment as being the extent of responsibility for compensation, and that this can be addressed through cash payments. Consequently associated impacts, such as downstream impacts, health consequences of elevated groundwater levels adjacent to headponds, and livelihood restoration, may be left out of the resettlement planning equation.
4. **Minimal safeguards standards approach.** Where a minimal standards approach can be applied, a developer may disregard even national land acquisition and compensation standards, and national agencies themselves may be unwilling or unable to monitor their application, or monitors in one country may be more effective than in another country on the same project. This also could lead to further substantial inequities for affected people, with one country more effectively protecting the rights of its citizens than another.
5. **Consistency of developer's approach needed.** If all countries support the premise that the developer is responsible for compensation and mitigation measures, a consistent approach throughout the LMB countries is necessary concerning the developer's responsibilities towards a land acquisition, compensation, mitigation measures and livelihood restoration programme, which does not depend solely upon cash compensation, but is approached as a development project in its own right.
6. **Political unrest** caused by social discontent among affected people in one country could cause construction delays, causing associated construction delays in the transboundary country and resulting in overall higher construction costs for the developer, delays in meeting power purchase agreement deadlines and possible consequent financial penalties.
7. **Disease** does not recognise national boundaries. Existing health problems which could be exacerbated by construction and operational activities, and development of new problems, need a coordinated transboundary approach to anticipate and address.
8. **Natural phenomen**a, such as naturally-occurring arsenic in groundwater, are also not restricted to one country. Again, a coordinated approach is required to address potential risks to human health.
9. Those engaged in the illegal activity of **human trafficking** routinely circumvent national policies and procedures. Improvement of communications and transport networks require associated improvement of transboundary frameworks to deal with this.
10. Lastly, operational procedures need **transboundary agreements on dam safety and downstream flood preparedness**. A large dam does not need to fail to have severe consequences, and notification procedures and preparedness are essential, as are downstream early warning procedures in case of sudden water releases, particularly in densely populated areas such as the lower reaches of the LMB.

The resettlement component of any project is often the weakest component in a dam developer's armoury. This is unwise at best, as it risks contributing to substantial cost overruns, implementation delays and social unrest. At worst it can lead to considerable political unrest, and is a high risk approach for any government.

It is more cost effective to plan properly beforehand to thoroughly address resettlement issues to a high standard, to agree on common transboundary standards and procedures, to agree on compensation responsibility for transboundary impacts, to employ competent and experienced personnel to assist in this process, and to put up enough money to pay for these costs. Unfortunately, project developers are often unwilling to release funds until money starts being generated in the

operational stage. This is far too late, increases affected people's vulnerability, and costs the project more in the long run to restore livelihoods.

2.3.4 HUMAN TRAFFICKING

Human trafficking is defined as "the recruitment, transportation, transfer, harbouring or receipt of persons by means of threat or use of force or other forms of coercion, of abduction, of fraud, of deception, of the abuse of power or of a position of vulnerability or of the giving or receiving of benefits or payments to achieve the consent of a person having control over another person, for the purpose of exploitation."[65] Human trafficking in the LMB is, according to UNIAP, a far from homogeneous operation, consisting of small-scale ad hoc activities to large, well-organised operations. While trafficking affects both men and women, adults and children, it is commonly acknowledged that young women and children are more vulnerable to this form of abuse and exploitation than other segments of the population.

During the last decade, increased migration and accelerated globalisation have raised the attention of LMB countries on human trafficking. In Laos, human trafficking, among other illegal activities, "represents a threat to both national and human security"[66]. Laos acceded in 2003 to the International Trafficking in Persons Protocol under the Trans-national Organised Crime Convention[67]. Cambodia[68] ratified the Protocol in 2007, Thailand signed in 2001 but has not ratified the Protocol, while Vietnam[69] is not yet a signatory. Thailand has, however, introduced a new human trafficking law[70] which covers the above definition and also considers any person under the age of 18 as being considered a victim of trafficking, irrespective of his/her consent. All four LMB countries have signed the ASEAN Declaration Against Trafficking in Persons Especially Women and Children (29th November 2004), as well as an MOU on cooperation against trafficking[71].

UNODC estimates between 200,000 and 450,000 people are trafficked within the Greater Mekong Sub-region. It is believed that some 90% of trafficking from Laos occurs to Thailand, where the majority of victims are girls aged between 12 and 18. It is estimated that about 35% end up in prostitution, 32% in forced labour, 17% in factories and 4% on fishing boats[72]. Thailand is the primary

[65] United Nations Inter-Agency Project on Human Trafficking (UNIAP), March 2008,

[66] Deputy Minister of Justice, Mr. Ket Kiettisack, statement made during the Tripartite Meeting-R76: Strengthening of the Legal and Law Enforcement Institutions to Prevent and Combat Human Trafficking, Lao PDR, September 2009

[67] Laos also prohibits human trafficking under its Penal Code Article 134, revised in 2006

[68] In 2008 Cambodia passed the Law on the Suppression of Human Trafficking and Sexual Exploitation

[69] Revision of Vietnam's Penal Code is currently under way, to include penalties on human trafficking, and has issued a National Circular on Policy Application for Victims of Trafficking, 2008

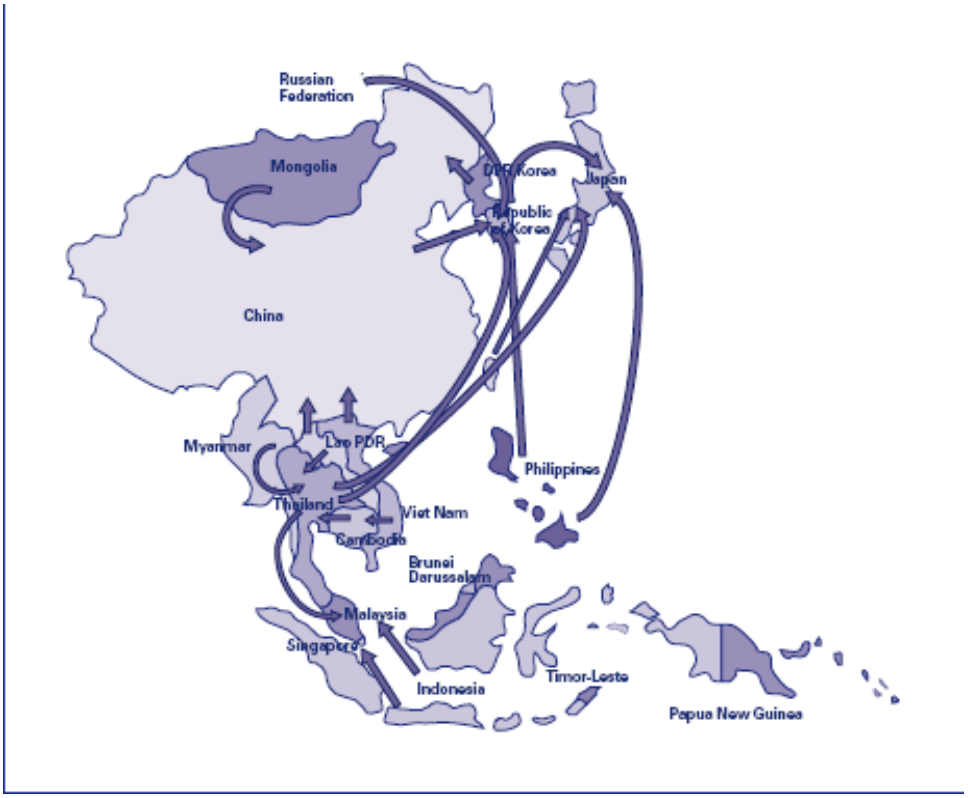
[70] Anti-Trafficking in Persons Act, BE 2551 (2008)

[71] COMMIT Memorandum of Understanding on Cooperation Against Trafficking in Persons in the Greater Mekong Sub-region, 29th October 2004

[72] UNIAP datasheet, Lao PDR, March 2008

destination of choice from other countries also (Map B.8), as well as a staging post for transportation overseas.

Map B.8: East and Southeast Asia trafficking routes



Source: "Reversing the Trend – Child Trafficking in East and Southeast Asia",

UNICEF East Asia & Pacific Regional Office, August 2009, p. 30

Commonly cited causes of human trafficking[73] include:

- limited educational and livelihood opportunities have created pools of young, unskilled labour looking for employment (e.g. about half Cambodia's population is under the age of 20)
- inadequacy of agricultural opportunities and increasing scarcity of productive land lead many to seek work elsewhere
- uneven economic development due to the influx of foreign currency
- road construction and support infrastructure facilitating both human and drug trafficking
- revised international border protocols now making it easier to conceal and smuggle people (e.g. between Vietnam and Laos, vehicles used to have to empty and re-load at borders, but now can go straight on through, which increases ability to hide people)

[73] UNIAP datasheets for Lao PDR, Cambodia, Thailand and Vietnam, March 2008; discussion notes with International Organisation for Migration, Lao PDR

- young people looking for money, excitement and change, being duped by intermediaries
- increase in tourism
- attempts to escape from indebtedness
- sexual exploitation
- marriage to foreigners
- selling babies to foreigners for adoption
- various forms of bonded labour, including sexual exploitation, factory work, agriculture, fishing and construction
- professional begging

Although not a new phenomenon, children and young women from ethnic minorities are particularly vulnerable to being trafficked from rural to urban areas and within their own countries, as they are often isolated by language from the majority population, less educated and unaware of exploitation, in some countries denied official documentation making them official "non-persons", and easily fooled by foreign workers seeking temporary wives. In Lao PDR for example, roads and support infrastructure construction using foreign labour, particularly of Chinese migrants, have facilitated human movement, especially in areas previously remote with a high ethnic minority population, such as border areas between China and Laos, Burma, and Vietnam[74]. Many Chinese and Vietnamese construction companies prefer to bring in their own labour, introducing opportunities for sex workers in beershops and entertainment places which can be found more in main transit and transport routes and on construction sites. Sex workers are very mobile, typically staying 1-3 months in an area and then moving on as camp followers of construction workers. Many construction worker partners are also sex workers who also do not access local health services because of their very mobility, or who are not authorised to use the contractor's health services. Construction workers travelling to their home country for holiday may then have unprotected sex, either infecting their home partner or infecting the sex worker on their return.

According to UNICEF[75], the absence of policy frameworks can affect regional cooperation and coordination. Even where they exist, their implementation is limited, reflecting weak country capacities as well as incomplete data and inadequate monitoring. Very often the authorities find it difficult to distinguish between a person who is trafficked and who is an economic migrant by choice, and thus the issue of trafficking ranks low on national priority lists. Additionally, health issues related to construction workers are considered the responsibility of individual contractors, who may or may not prepare and implement appropriate health plans. Two useful ways to address the issue have been (i) local village-level information campaigns on the dangers of accepting job offers through roving brokers - these have been quite successful in southern provinces of Lao PDR, where a much higher level of awareness now exists among villages in Champassack for example[76]; (ii) well prepared health programmes targeting migrant labour and sex workers – for example, on the Nam Theun 2 hydropower project.

[74] Report from International Organisation for Migration, July 2009

[75] "Reversing the Trend – Child Trafficking in East and Southeast Asia", UNICEF East Asia & Pacific Regional Office, August 2009

[76] Elizabeth Mann & Noukone Onevatthena, "Village Review Study", Lao Land Titling Project II, National Land Management Agency, Lao PDR, TA Report 4.54

3 SITUATION ANALYSIS: CASE STUDY PROVINCES AND DISTRICTS

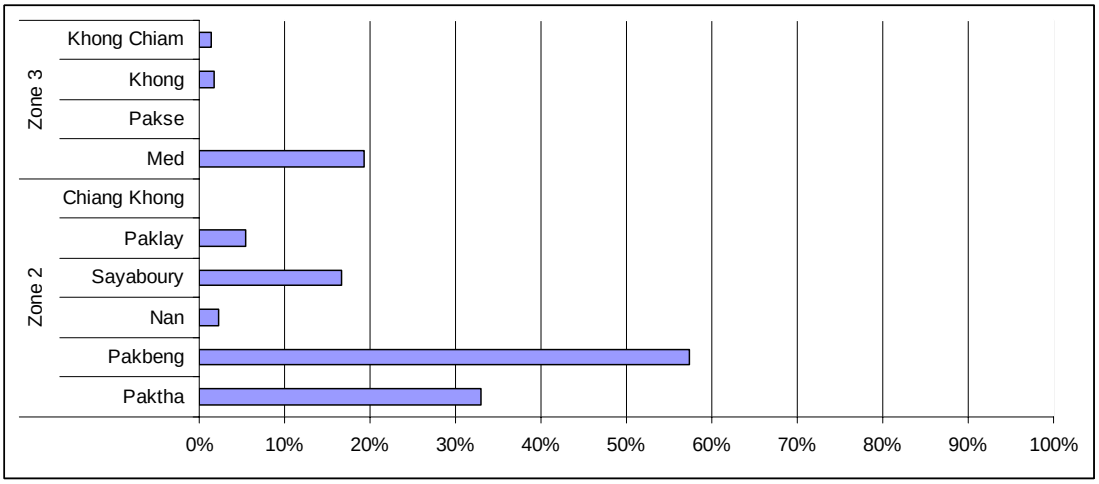
Data sources for all tables and figures in Section C are from district-level fieldwork conducted by the SEA's Lao and Thai national teams, unless otherwise specified.

3.1 TOPIC 1: POVERTY, ETHNIC GROUPS AND LIVELIHOODS

3.1.1 INCIDENCE OF POVERTY IN CASE STUDY DISTRICTS

Of the 8 Lao PDR case study districts, two are officially classified as poor and of high priority for poverty alleviation (Pakbeng, Xayaboury), while two others are officially classified as poor (Paktha, Med). The justification for this classification is reflected in Figure C.1, with the incidence of poor families by district. The remaining four Lao districts (Nan, Paklay, Pakse, Khong), are not classified poor. Nonetheless, Nan and Khong districts do show comparable poverty incidence to Xayaboury and Paktha, demonstrating clear pockets of poverty, and Khong district authority has annual records of people travelling to Thailand to work, amounting to more than 4% of the district population each year seeking work elsewhere. Thailand shows a much lower incidence of district poverty levels, though according to the 2004 Thailand FIVMS report, both case study provinces fall into a category of "significantly negative main food insecurity and nutrition outcomes"[77].

Figure C.1: Lao & Thai case study districts: poverty incidence



Source: SEA Lao PDR &Thailand National Team data

There are wide variations in achievement between Lao PDR provinces and districts in achieving poverty reduction and in determining well-being. In Section B a cross-section of without-dams poverty-related indicators relative to case study provinces were presented, indicating that poverty

[77] *FAO, FOOD INSECURITY & VULNERABILITY INFORMATION & MAPPING SYSTEMS (FIVIMS), THAILAND NATIONAL FIVIMS, "VULNERABILITY MAPPING OF PROVINCES", 2004,*

distribution is highly variable across provinces, with some provinces (e.g. Oudomxay, Luang Prabang) experiencing greater internal poverty rates than others. It also shows that substantial food security variations can be seen not just between countries, but between provinces, with northern Lao PDR provinces experiencing the highest rate of food insecurity. These trends are confirmed at district level with widely differing distribution of poor families in different districts (Annex 3, Table 3.2). These data support the premise made by WFP that poverty is directly linked to dependency levels on natural resources, and on the vulnerability of dependent communities to loss or degredation of these resources.

Lao district poverty alleviation strategies (Table 2.1) focus primarily on what has been defined by government as the most essential services, namely road access, clean water supply, school and health facilities, loans, market development and land allocation. Market development is focused on cash crops and livestock. Strategies are funded from several different sources, including the national budget, as well as resources mobilised from NGOs and IFI loans and grants. Thailand's poverty alleviation strategies are based on outputs from an extensive participatory poverty assessment which provided recommendations for its 9th NESDP. Figure 2.2 shows Pakse and Chiang Khong districts with the highest number of urban villages and Pakbeng and Khong, the lowest. Med has almost 61% of its villages in remote upland rural areas located at some distance from the Mekong river.

Thai case study districts, by contrast, have placed a very high priority on livelihood development for poor households, focusing on fisheries development. Ubon Ratchathani province has identified fisheries development on the Mun river as a key poverty alleviation strategy for Khong Chiam district, while Chiang Rai province is focusing on fish pond breeding as its livelihood strategy for the poor in Chiang Khong district.

District data emphasise the differences between LMB countries in assessing poverty, as well as in selecting poverty reduction strategies. The contrasting approaches strongly reflect the differing living standards in the respective countries and the strategic response – Laos focusing on infrastructure provision, Thailand focusing on livelihood development.

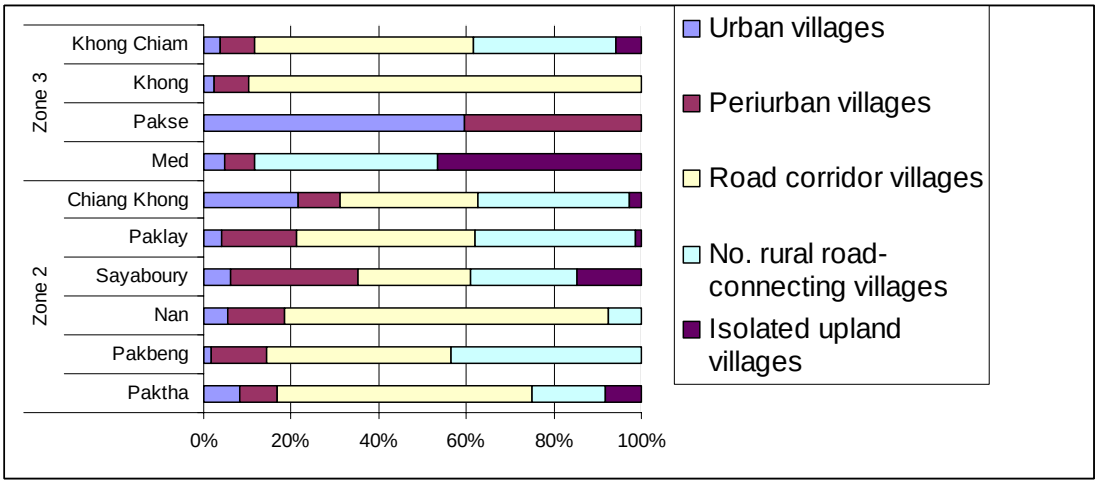
Table C.1: Lao & Thai case study districts: key poverty alleviation strategies

Official district poverty threshhold (kip per person per day)	Total families clasfied poor in the district	Province	District	District poverty alleviation strategies							Availability of replacement agricultural and housing land
				Road and drinking water infrastructure development	Village funds establishment	Organize productive groups for agriculture & fisheries	Land allocation	Emergency food provision	Integrated housing programme for the poor	Total number of villages relocated by the government in previous 5 years	
1,185	239	Bokeo	Paktha	✓	✓	✓	✓	x	x	11	✓
2357	1,750	Oudomxay	Pakbeng	✓	✓	✓	✓	x	x	0	✓
0	115	Luangprabang	Nan	✓	✓	✓	✓	x	x	0	✓
0	2,017	Sayaboury	Sayaboury	✓	✓	✓	✓	x	x	0	✓
692	8591		Paklay	✓	✓	✓	x	x	x	6	✓
758	1,163	Vientiane	Med	✓	✓	✓	✓	x	x	0	✓
0	0	Champasack	Pakse	x	x	x	x	x	x	0	✓
261	0		Khong	✓	✓	✓	✓	x	x	11	✓
ND	38	Chiang Rai	Chiang Khong	x	x	✓	x	✓	x	0	ND
ND	80	Ubon Ratchathani	Khong Chiam	x	x	✓	✓	x	✓	0	ND

Source: Source: SEA Lao PDR & Thailand National Team data

Relative prosperity of different case study districts is further reflected in the level of basic amenities such as electricity and roads, and in educational statistics. Again, Pakbeng as one of the poorest district also reflects poor utility use with less than 15% of families and villages with access to electricity. In other districts, while there are gaps between the number of villages with electricity connections and the number of families able to afford this utility, only Med, Xayaboury and Nan show disparities of more than 10% between availability and use of electricity. In Med and Nan, more villages have connections than families, indicating that poor families in electrified villages may not be able to afford the utility. In Xayaboury however, the higher number of families with electricity connections than villages which are electrified indicates a greater concentration of the population in villages in and around urban centres and main road corridors. These districts contrast starkly with Thai districts for access to key amenities.

Figure .2: Lao & Thai case study districts: village types and road access



Source: SEA Lao PDR & Thailand national study teams

Educational facilities and standards are well represented in southern Lao and in Thai case study districts (Annex 3, Table 3.3), less so in northern Lao districts. Adult literacy rates demonstrate a clear gender bias in some districts, with females in Paktha, Nan and Med districts substantially less literate than males. All Lao riparian case study districts reflect much lower educational standards in these districts when compared to provincial educational statistics, whereas all Thai case study districts show higher or equivalent statistics compared to their province's standards. An average of 38.6% males and 35.25% of females are literate. An average of 23% of the total population of the 8 Lao districts is in primary or secondary education, which is a figure well below the percentage of children under the age of 14 in each district. All districts fare quite poorly with secondary schools, and only 58% of Lao students completing primary school continue to secondary education. However, all Lao districts except Pakbeng, Nan and Paklay, have more primary schools than there are villages, although this does not mean that where there are more primary schools than villages, that a village school functions very effectively. By contrast, there are more villages in Thailand than primary schools. Education is given a high priority in Lao PDR, and among many ethnic minorities it is seen as an important pathway out of poverty. Data confirms that populations in Zone 2 suffers from lower

access to basic infrastructure, higher poverty rates, and lower literacy rates, than populations in Zone 2.

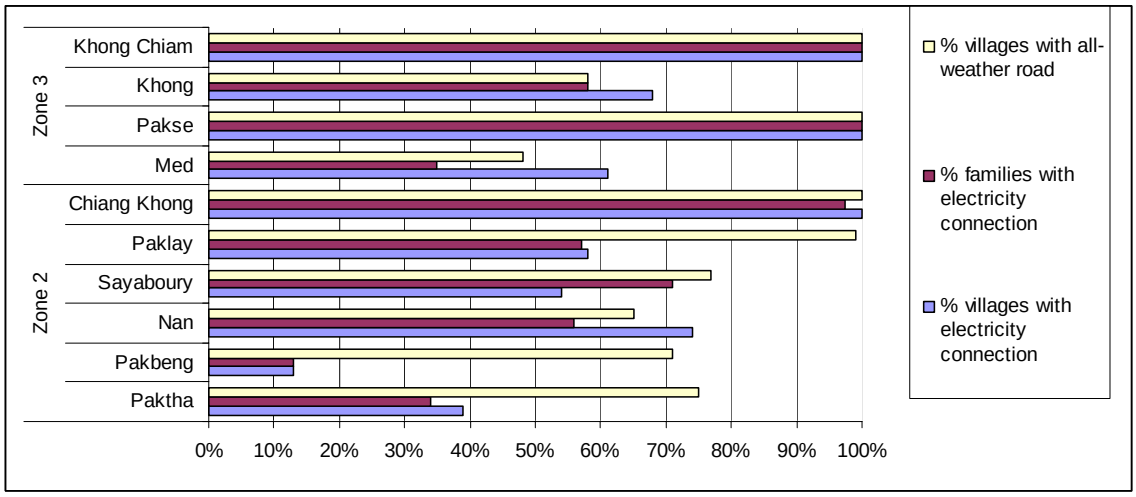


Figure C.3: Lao & Thai case study districts: percentage villages and families with electricity connections and access to all-weather roads

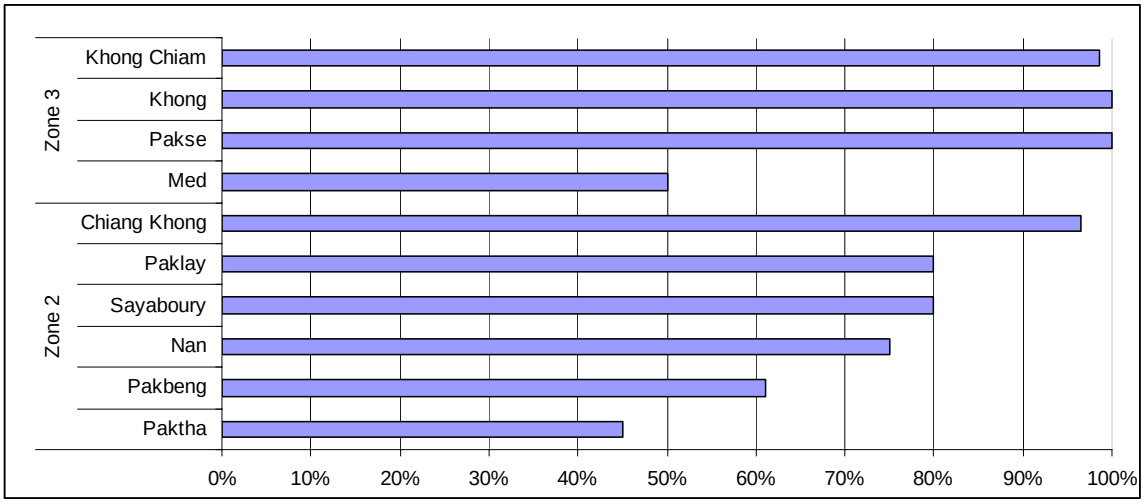


Figure C.4: Lao & Thai case study districts: percentage literate population

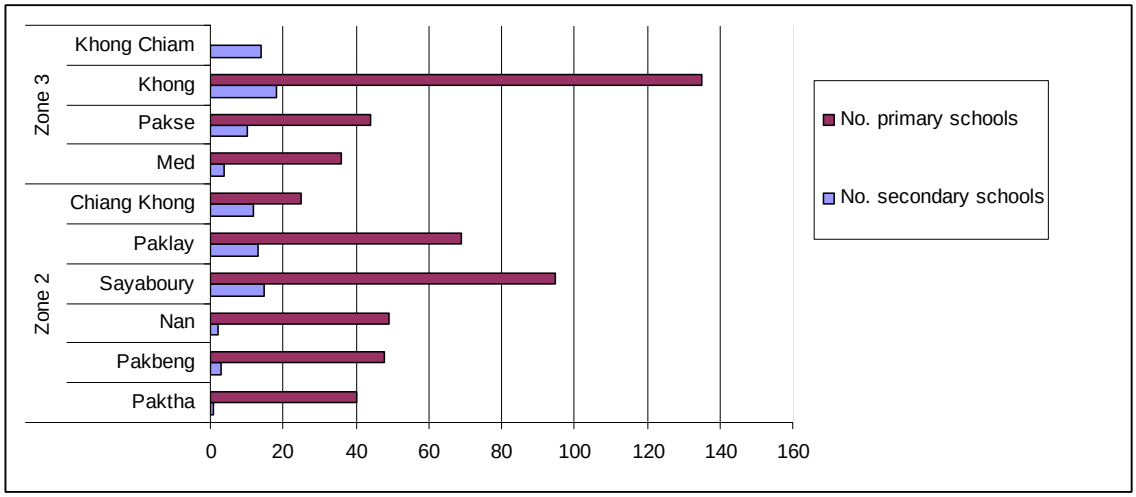


Figure C.5: Lao & Thai case study districts: number of primary and secondary schools

Sources: SEA Lao PDR & Thailand National Team data

3.1.2 ETHNIC GROUPS IN CASE STUDY DISTRICTS

Map B.3 showed Lao PDR's ethnic minority groups as a percentage of the total population. Ethnic diversity is further reflected at district levels. Districts Med, Nan and Pakbeng have high proportions of ethnic Khmu (Mon-Khmer language group), while Xayaboury and Paktha have significant populations of Leu. Both these groups live mainly in highland areas in the north or central south of Laos, belong to the most diverse of ethnic groups, and are fairly assimilated into the mainstream civil society due to hundreds of years of interaction with Lao-Tai language groups, which as Figure C.6 shows, is the majority ethnic group in all case study districts except Pakbeng. Nonetheless both Pakbeng, Med and Xayaboury with their substantial representations of ethnic minorities are also the poorest districts.

Nan, though with a very high proportion of Khmu (37%) is not among the poorest districts, making a simplistic correlation of poverty with ethnic identity less plausible. However, with an estimated 30-40% of the population of Nan living below the poverty line[78], more detailed research at village level would be needed to assess whether this poverty incidence was experienced more among the Khmu and Hmong population than among Lao.

Hmong are present in 7 of 8 case study districts, typically in northern areas rather than the south, both in Laos as well as Thailand. As a major border and transport hub district, Pakse's ethnic distribution reflects its important trading and communications role, with 10% respectively of Chinese and Vietnamese inhabitants.

[78] Figure 5 Map of the Incidence of poverty of each district, "The Geography of Poverty & Inequality in the Lao PDR", NCCR & IFPRI, 2008, op cit

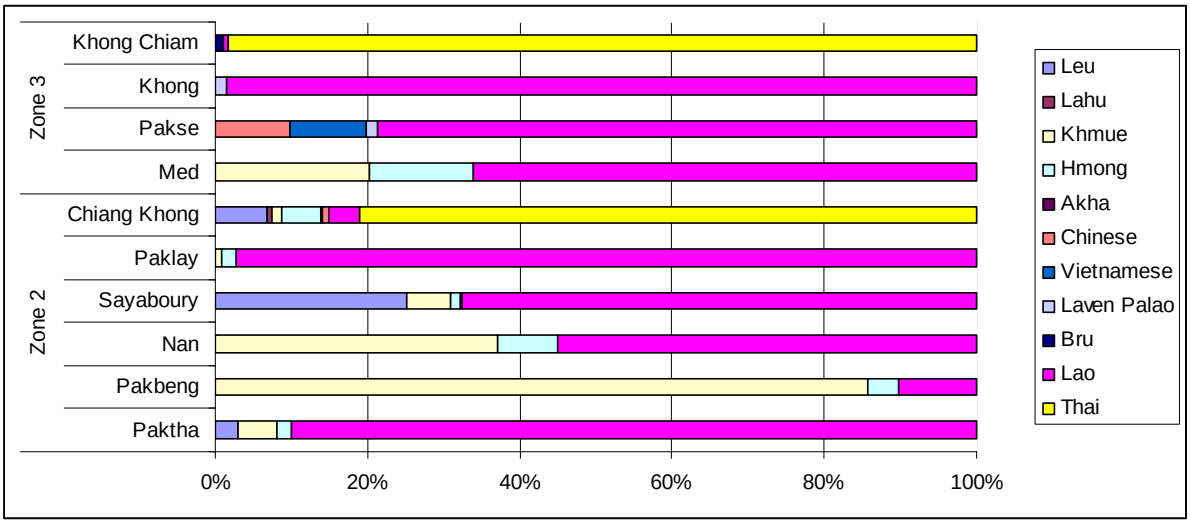


Figure C.6: Lao & Thai case study districts: main ethnic groups (as % of district population)

Source: SEA Lao PDR National Team data

District data confirm provincial and national findings that the bulk of the population in most riparian case study provinces and districts belong to the majority Lao/Thai ethnic groups. These communities tend to follow sedentary agricultural practices and are well assimilated into a market economy. Other identified ethnic groups, however, such as Akha, Hmong, Khmu, Lahu and Bru, share somewhat different general characteristics, such as having flexible places of residence, and demonstrating a very high dependence on natural resources but in association with shifting cultivation. It is these groups which suffer the most when land use practices change. However, all communities are affected by land acquisition due to development projects, irrespective of their ethnic identity.

IEEs for Xayaboury, Pak Beng and Pak Lay hydropower projects, identify **Nan, Xayaboury, Pak Beng**, Xienghon, Khop, **Paktha,** Houayway, Tonpheung, **Med,** and **Pak Lay** (SEA case study districts highlighted). These documents provide very limited analysis of ethnic groups of affected households in these districts, but note that they include Lao Thai, Khmu and Hmong.

3.1.3 LIVELIHOODS AND THE NATURAL RESOURCE BASE IN CASE STUDY DISTRICTS

There is little information from the MRC concerning the livelihood base of LMB countries apart from very comprehensive research on fisheries dependence. This is covered under the separate Fisheries Theme. However, as the proposed mainstream dams will substantially affect not only aquatic resources, but land resources, more research is needed to flesh out this topic.

Figure C.7 shows principal livelihood sources in case study districts, both in terms of the subsistence and the cash economies. This clearly shows the high dependence of populations on natural resources and associated income opportunities (such as trading) for livelihoods, as well as the considerable household diversification of employment sources. Not all livelihoods sources have been included in this Figure, as the number and diversity are too great, and while a particular income source may be significant in one district, it may not be in other districts. For example, sand and gravel extraction from river beds, including that of the Mekong river, is an important (15%) livelihood source in Paklay district, but insignificant in other districts. Again, tourism is very important (20%) to Khong district,

but not to others. Aquaculture is almost irrelevant in all districts except Paktha and Pakse (2% respectively).

The overwhelmingly rural nature of case study districts is emphasised by the high dependence on agriculture as the main livelihood source. Pakse is the exception, with less than 4% dependent on agriculture, but a much higher proportion depending on agricultural trading (12%), other forms of small-scale trading (almost 20%), and urban labouring (19.6%). Nan district also has a high proportion (56%) engaged in agricultural trading. River fisheries are not that important as an income source, except to Khong district (30%), where it is a very significant contribution to district livelihood sources. 20% of the population of Med and 10% of Nan rely on income from seasonal labour migration.

Different sources of investment provide different employment opportunities. In Bokeo, Sayaboury, Paklay and Med districts, land concessions given to external investors for plantations, coupled with relocation of large proportions of the population from remote areas to roads, have created a labour force of between 10-20% of the district population relying on plantation work. However, as the vast majority of riparian land is privately and individually owned, rather than classified as common village land, and as riparian land is the most productive and valuable of all available land, most concessions have been awarded in other parts of the districts and provinces, rather than immediately adjacent to the Mekong river.

While agriculture forms the livelihood basis of 80% of district populations, and more of 6 of the 10 case study districts, it is less important (though still the main livelihood source) for the 2 Thai districts as well as for Paklay district. While Paklay households depend more on plantation work, it also has a thriving sand and gravel extraction business from the Mekong river, accounting for 15% of the district's employment. The 2 Thai districts have a higher proportion of their populations working in factories and as labourers. Again, the data for livelihoods sources indicates that caution is needed when looking at impacts according to agro-ecological zones, as these data reflect national trends, rather than zonal trends.

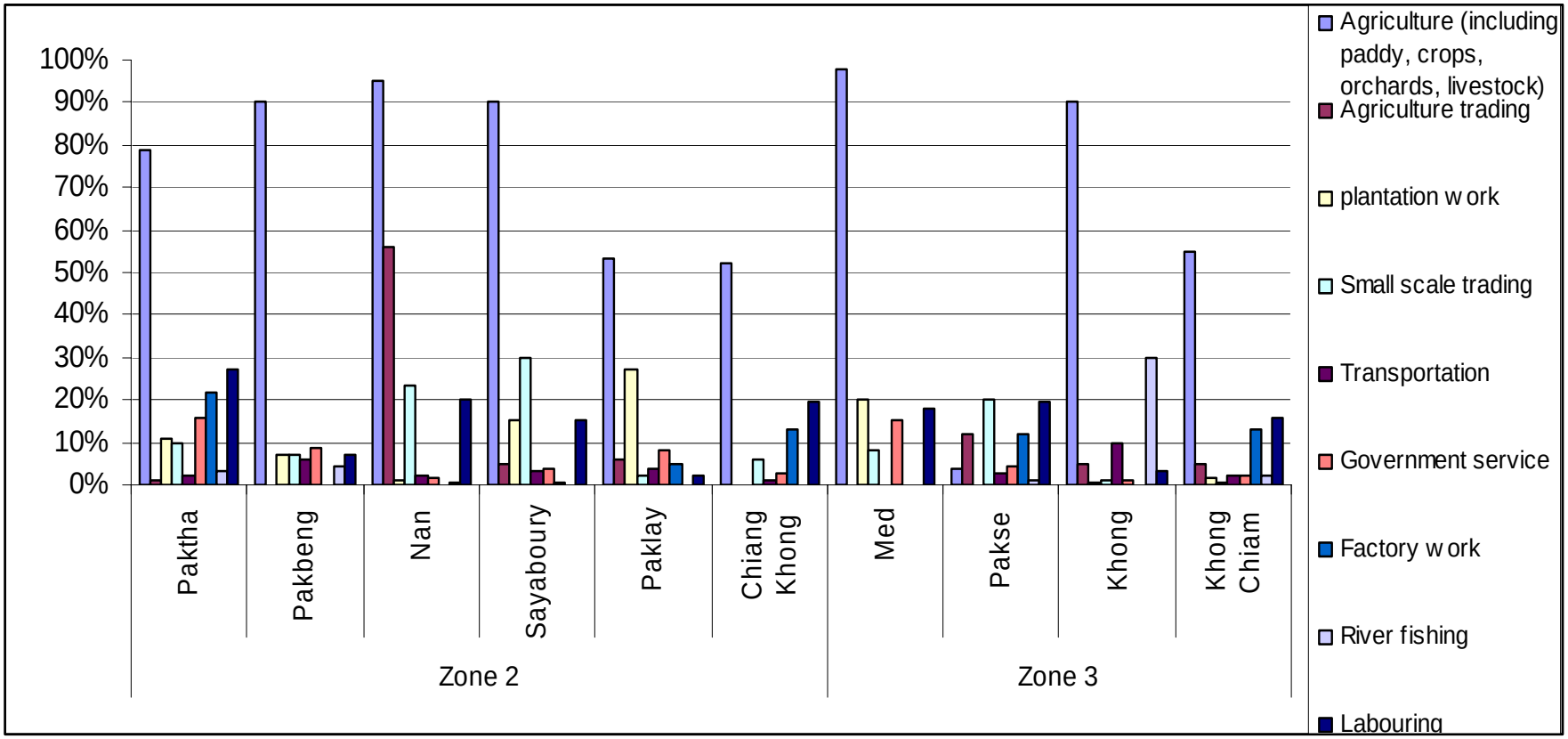
Need for caution is confirmed when looking at available IEEs for Xayaboury, Pak Beng and Pak Lay hydropower projects[79]. These documents note that considerable differences are apparent between villages concerning incomes, and between districts concerning infrastructure and opportunities.

Demographic data supports the overwhelmingly rural nature of case study districts. Although a key poverty alleviation strategy is market development for cash crops, this appears to have limited impact to date or reflects a predominantly subsistence and natural resource-based economy, rather than a market economy. Despite Pakse not including market development as a poverty alleviation strategy the district pursues (Table C.1), it remains best served in this respect, with 10% of its villages having access to a market, while in Pakbeng, Nan and Khong, only 2% of district villages have access.

[79] "Final Report: Social Impact Assessment of Xayaburi Hydroelectric Power Project, Lao PDR", Ch. Karnchang Public Company Ltd., Team Consulting Engineering & Management Co. Ltd., August 2008; "Initial Environmental Examination: Pak beng Hydropower Project, Lao PDR", Earth Systems, Norconsult, December 2008; "Initial Environmental Examination: Pak Lay Hydropower Project, Lao PDR", CEIEC & Sinohydro Joint-Venture, Earth Systems, Norconsult, June 2008

Livelihood sources directly related to the Mekong river as reported by case study districts include fishing, fish farming, floating gardens, riverbank gardens, sand and gravel extraction, gold panning, and gathering of acquatic plants. However, apart from sand and gravel extraction and to a small extent fisheries, all these livelihood sources form a component of household livelihoods rather than the main source. Nonetheless, these are still very important components, mainly viewed as the "free" benefits the Mekong river provides to its riparian communities.

Figure C.7: Lao & Thai case study districts: principal livelihood sources



3.2 TOPIC 2: HEALTH, NUTRITION AND FOOD SECURITY IN CASE STUDY DISTRICTS

In general health facilities are limited and health personnel even more so in both Lao and Thai case study districts, with the exception of Khong Chiam (Ubon Ratchathani). All districts have one hospital (Annex 3, Table 3.4), and several health clinics. However, should these be required to deal with a major disease outbreak, they would be very hard pressed to do so, given the low number of district health staff in proportion to the overall population. This situation can help to explain why Laos is lagging far behind other LMB countries in achieving its MDG goals for reduction of under-five year old mortality rate and maternal mortality rates.

Southern Lao provinces are worse off in terms of health amenities and available skills than northern provinces (Figure C.8). Despite being an important trading centre in southern Laos, Pakse also reflects low proportions of health workers for the number of people that may need their services. Across the Mekong river by contrast, Khong Chiam district shows higher numbers of district and village health workers in proportion to district population.

Thailand has come to terms with the threat of HIV/AIDS much more quickly than Laos, and district health activities reflect national trends (Table 3.4 op cit), but both countries have implemented monitoring programmes on HIV/AIDS and all case study districts apply these. In Paktha, as in some other Lao districts, annual joint missions are made consisting of representatives of the Lao Women's Union, Thai HIV/AIDS Protection Agency, Lao Red Cross and officials from Bokeo's provincial Department of Health, to visit karaoke bars and restaurants to provide information on trafficking and risks of HIV/AIDS.

Where Lao districts responded with data, waterborne diseases are prime sources of morbidity, contrasting strongly with Thai districts where they do not even figure in their top 10 list of causes of morbidity (Annex 3, Table 3.5). Lao districts acknowledged they do not keep statistical records of main causes of mortality and morbidity, and data in Table 3.5 reflect best estimates by health officers. In Khong district both typhoid and dengue are acknowledged regular killers each year, which may be exacerbated by waterlogging in villages and poor drainage conditions, giving rise to fairly high overall vector borne disease risk. In this district, health personnel and village health workers are not adequate to cope with any major outbreak of vector-borne disease.

The relatively higher incidence of waterborne disease as contribution to overall morbidity in Lao districts is further emphasised by the status of water and sanitation in Lao and Thai case study districts (Annex 3, Table C.6 and Figure C.9). Figures are very variable across both Lao and Thai districts, and even where a high proportion of families are considered to have good sanitation facilities, these may not be matched by a correspondingly high proportion of families with clean water supply. For example, while Khong Chiam is reported to have 96.6% of district families having sanitation, only 18.6% of its families are said to have a clean water supply (Figure C.9).

Neither Lao nor Thai case study districts report having a food security strategy, nor micronutrient programme, despite the relatively poor health status of Lao district populations as compared with Thai districts. This reflects high levels in Laos of dependency on external funding agencies to provide funds for micronutrients, and relatively poor knowledge levels among local communities as to the nutritional sources of their normal daily food intake.

Zonal divisions according to the MRC's categorisation are not really relevant here, as the contrast is clearer between countries rather than between agro-ecological zones. The same goes for health personnel statistics, which show less poor districts having proportionately fewer health workers per head of population compared to poorer districts. Health data confirm the fact that while different district, provincial, national or zonal classifications can be made on an intellectual level, more detailed study is required on a case-by-case basis to accurately gauge trends and changes over time of progress made against a wide variety of key indicators.

Figure C.8: Lao & Thai case study districts: number of district health staff and village health workers available per head of district population

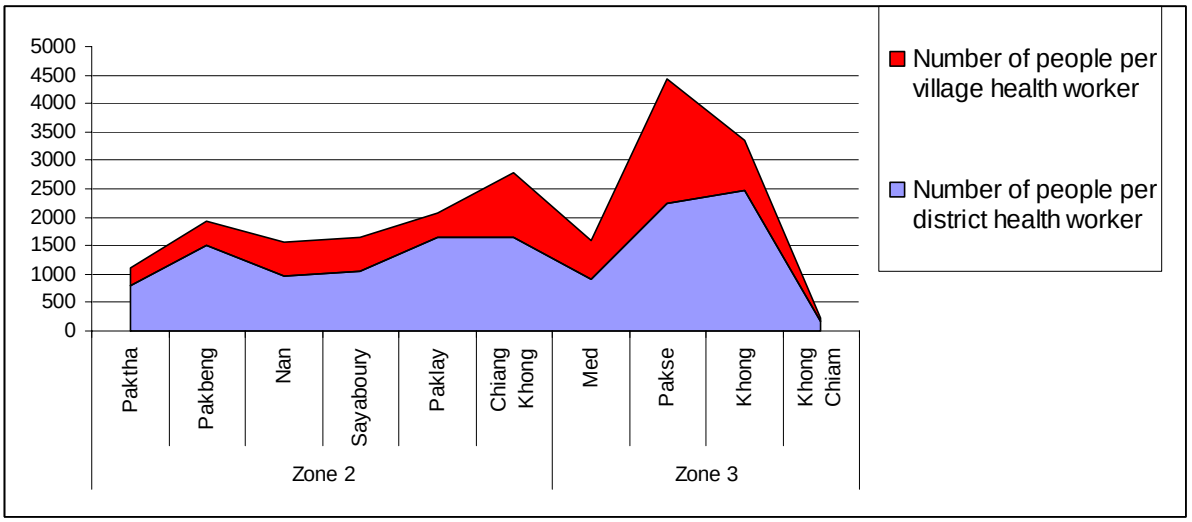


Figure C.9: Lao & Thai case study districts: percentage families with access to sanitation & clean water supply

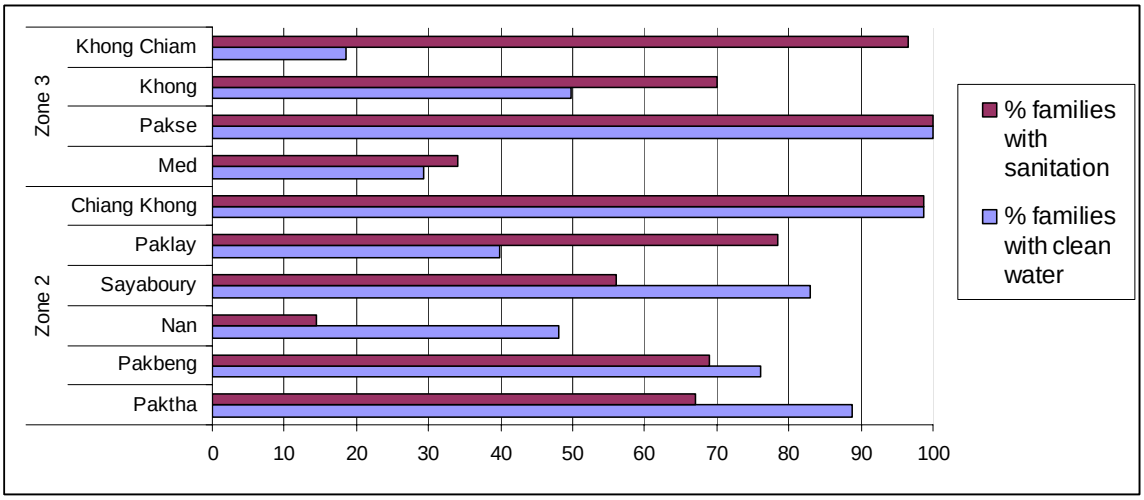


Figure C.10: Lao & Thai case study districts: percentage families experiencing food insecurity for more than 6 months a year

Sources: SEA Lao PDR National Team data

Zonal definitions are again not relevant when related to food security as Figure C.10 shows. Here we can see a clear demarcation between Zones 2 and 3 of families in the same country experiencing food insecurity for more than 6 months a year, but no families in Thai case study districts are reported as experiencing food insecurity. This suggests that poverty and food insecurity are more closely related to national policies and the effectiveness of their implementation, rather than to agro-ecological conditions.

3.3 TOPIC 3: RESETTLEMENT, DEMOGRAPHY AND HUMAN TRAFFICKING

3.3.1 DEMOGRAPHY OF CASE STUDY PROVINCES AND DISTRICTS

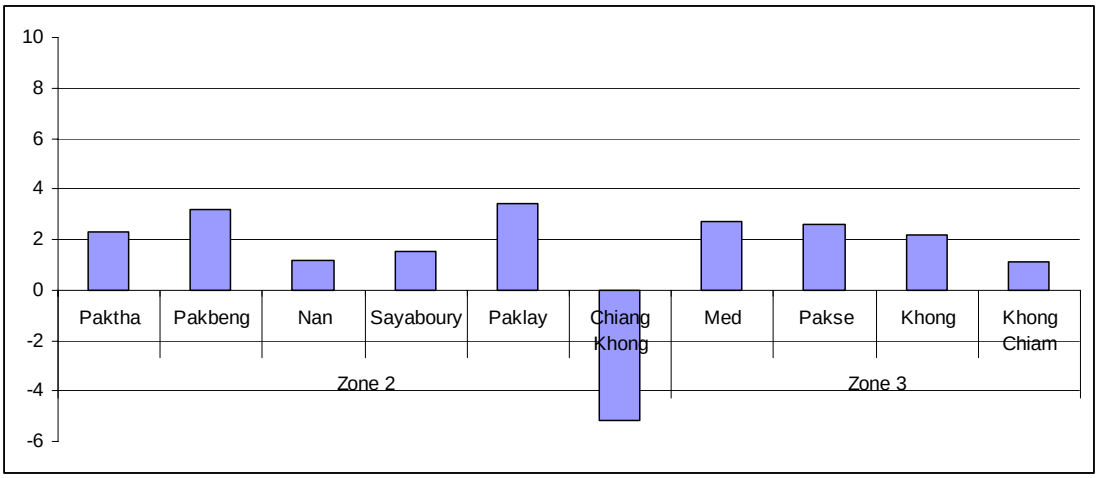
The 10 Lao PDR and Thailand district case study data reflect an overwhelmingly rural composition and livelihood resource base (Annex 3, Table 3.1). However, the urbanisation and accessibility of these districts are increasing, with only two districts (Xayaboury and Khong Chiam) having a higher rural population in proportion to overall provincial figures (ibid).

Population growth and density are very variable across case study districts, reflecting their location in relation to other development opportunities in the region. For Lao PDR, where border access between Laos and other countries is relatively easy, population growth and numbers are higher. Thus Med district in Vientiane province has experienced population growth per annum of 2.7%, Pakse district in Champassack province 2.6%, and Paklay in Xayaboury province a significant 3.4% (Figure C.11). However, Thai districts have not experienced the same growth rate, and Chiang Khong has even experienced negative growth, reflecting the fact that Chiang Rai has the lowest annual population growth rate of all case study provinces.

Consistent with these growth patterns are population densities per square kilometre (km²): Pakse has the highest density at 611 persons per km². The next nearest to this figure is Chiang Khong district, at 75 persons per km², but districts in the upper reaches of the Mekong river indicate much lower population densities overall, reflecting hillier terrain and poorer accessibility, for example Xayaboury district is a mere 17 persons per km², while the other northern Lao districts on river reaches to Med average 26 persons per km². Of all districts except Pakse, the overwhelming proportion of the case study districts' population are rural dwellers (average 76%), with Ubon Ratchathani and Sayaboury districts having the highest percentage of rural population at 92% and 91.57% respectively. This underscores LMB overall provincial data (Annex 3, Table 3.1), which support the district trends of higher population growth rates in Lao PDR, as well as high proportions of rural populations in both Lao and Thai riparian districts.

Of these demographics, a very high proportion of the population is below and above working age in Paktha, Pakbeng, Sayaboury, Paklay, Med, Pakse and Khong districts. In half the case study districts, almost, or more than half, the population is dependent on the other half or less of the population. In Thai districts by comparison, a much higher proportion of the population is of working age with a lower dependency ratio of the very young and very old.

Figure C.11: Lao & Thai case study districts: percentage population growth in the last 10 years



Sources: SEA Lao PDR National Team data

3.3.2 COMPULSORY RELOCATION IN CASE STUDY DISTRICTS

While project-induced resettlement information was not obtained from district data, government policy related relocation of villages to places in proximity to a higher number of infrastructure facilities has been pursued in three of the Lao case study districts. Paktha has displaced 30% of its villages, Paklay 8% and Khong 10% (figures rounded) within the previous 5 years. Many of the other districts have relocated villages in the previous 10 years. The 5-year rule of thumb has been taken as a time indicator for displaced persons to learn whether they can satisfactorily restore and re-establish their livelihoods in the new location. The period of vulnerability continues for some years after compulsory displacement, and when a district is already officially classified as poor, such as Paktha, it may reflect even higher levels of vulnerability and lower levels of resilience to any additional external shocks.

While Pakbeng does not acknowledge having relocated ethnic minorities in the previous 5 years, the IEE of the Pakbeng Hydropower Project notes that Hmong communities affected by the project have previously been resettled by government and are among the most disadvantaged villages in terms of poverty and social conditions. Thus households in both Pakbeng, as well as Paktha, Paklay and Khong districts, may be at risk of double jeopardy of displacement under proposed hydropower plans. Again, households in Ban Houay Xong, Nan district, potentially affected by the Xayaboury hydropower project, were moved from the uplands to the lowlands in the mid-1990's. Unfortunately they were forcibly displaced into an area which frequently flooded, and after 7 years were obliged to relocate themselves and for a third time try to establish their village and livelihoods again. Land acquisition will result in this village being forcibly displaced for the fourth time in 15 years.

However, even if Lao districts do not acknowledge having physically relocated villages, they have amalgamated villages by consolidating two or three into one administrative unit. In some areas this has caused inter- and intra-ethnic tensions, as it opens the possibility of a village authority being able to make decisions on a larger area of land, previously under the authority of traditional elders.

This kind of economic and social dislocation requires communities not only to lose their natural resource asset base but obliges them to re-create their livelihoods and build up their household asset base again and again. Given that highland ethnic minorities fall into the poorest categories of the country, this undermining of their livelihood base causes pockets of more than usually vulnerable communities to any additional forced displacement.

3.3.3 HUMAN TRAFFICKING

None of the Lao district officials keep data on human trafficking, nor are there any official programmes to address this. However, all Lao districts privately acknowledge that human trafficking occurs. Khong district authorities keep annual records of movement between Laos and Thailand, which accounts for some 4% of the population each year going to work in Thailand, but these records make no distinction of whether this is voluntary or involuntary migration.

Thai case study districts, however, both have anti-trafficking programmes in place. In Chiang Khong this consisted of training district officials on the anti-trafficking law, and an ILO-supported anti-child labour project starting in 2009. In Khong Chiam the anti-trafficking effort is more focused on community health workers collaborating with village health workers to raise awareness among local communities, encouraging local people to report incidences of human trafficking, and regular checks at karaoke and beer parlours to see if anyone is using child labour or trafficked persons.

All districts acknowledged that people trafficking, particularly of children, is a problem, but levels of coordination, planning, cooperation and activities to address the problem is very variable between different countries and different districts.

ANNEX 1: REFERENCES AND BIBLIOGRAPHY

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ANNEX 2: SUMMARISED LOWER MEKONG BASIN COUNTRY AND PROVINCIAL STATISTICS

Table 2.1: Demographic data for case study provinces

Country	Affected Riparian Province	Provincial Population	Female	Male	Total households/ province	Average HH size**	Density (per km²)	Rural Pop.(%)	Urban Pop.(%)	Growth rate (annual %) 4
Lao PDR[1]	Oudomxay	265,179	133,126	132,053	42,722	6.2	17.3	84.8	15.2	3
	Xayaboury	338,669	167,633	171,036	62,472	5.4	20.7	77.3	22.7	3
	Bokeo	145,263	73,162	72,101	25,629	5.7	23.4	86.3	13.7	3
	Luang Prabang	407,039	203,429	203,610	69,981	5.8	24.1	82.2	18.8	3.1
	Vientiane	388,895	191,433	197,462	69,128	5.6	21	76.4	23.6	3
	Champassack	607,370	306,524	300,846	105,093	5.8	39.4	79.5	20.5	3
Thailand[2]	Chiang Rai	1,129,701	562,824	566,877	314,700	3.5	96.7	82.3	18.7	0.7
	Ubon Ratchathani	1,691,441	844,534	846,907	396,200	4.2	107.4	84.1	15.9	0.9
Cambodia[3]	Stung Treng	111,734	56,099	55,635	21,179	5.2^	9^	69.8	30.2	3.21
	Kratie	318,523	160,158	158,365	65,632	4.8^	29^	69.9	30.1	1.91
	Total:	5,403,814	2,698,922	2,704,892	1,172,736					

Sources:

[1] "Population & Housing Census 2005", National Statistics Centre, Vientiane, September 2005, Tables 2.1 & 2.3

** Ibid Table 3.1

[2] Population & Housing Census 2000, Population by sex Table 1, and "Key Indicators of the Population & Households, Chiang Rai and Ubon Ratchathani"

[3] Population Census 2008, Provisional Population Totals, National Institute of Statistics,

4Laos Statistical Yearbook 2001: Table 25, Cambodia Population Census 1998, Thailand Population Census 2000: Preliminary Results Table 2

^National Institute of Statistics, 2004, and Provincial Food Security Profiles for Stung Treng and Kratie 2005

Table 2.2: Key National Strategic Plans and Policies for Poverty Alleviation and Socio-Economic Development

Laos	Thailand	Cambodia	Vietnam
Millenium Development Goals			
National Growth & Poverty Eradication Strategy (NGPES), October 2003	MDG Plus 2007	National Strategic Development Plan 2001-2010	Hunger Eradication & Poverty Reduction Strategy 2001-2010
Sixth National Socio-Economic Development Plan 2006-2010 (NSEDP), Committee for Planning and Investment, October 2006	10th National Economic & Social Development Plan, 2007-2011	National Poverty Reduction Strategy	Comprehensive Poverty Reduction & Growth Strategy 2001
			Socio-Economic Development Strategy (SEDS) 2001-2010

Table 2.3: Case study provincial statistics on basic poverty indicators

Country	Affected Riparian Province	Provincial population as % of total population	Provincial poverty rate (%)*	% Poor Villages**	% Poor Hhs**	Provincial poverty gap (%)^**	% Female headed HHs*^	Dependency Ratio	Average (2001-05) net per capita rice production as % of requirements per province^
Lao PDR[1]	Oudomxay	4.7	6.22	91.6	60.1	24.7	7.1	87	-34.2
	Xayaboury	6	4.41	47.4	30.9	3.1	7.7	69	-18.3
	Bokeo	2.6	1.61	64	52.6	9.5	10.4	77	-17.9
	Luang Prabang	7.2	8.47	76.4	72.2	9.8	7.8	83	-42.5
	Vientiane	6.9	4.05	84.9	33.7	5.7	7.9	72	23.2
	Champassack	10.8	5.94	51.1	19.7	9	13.5	79	17.5
Thailand[2]	Chiang Rai	1.8	10.3	52.35#	3.83#	ND	25.5	51.3	96.2 ^*^*
	Ubon Ratchathani	2.7	18.1	12.8 ^*^	0.3 ^*^	ND	16.9	60.4	142.9 ^*^*
Cambodia[3]	Stung Treng	0.8	46.1	ND	47	3.9	16.8	84^^	163.1
	Kratie	2.4	46.1	ND	29	11.7	18.3	80^^	18.1

Sources: (ND=No Data)

[1] "Population & Housing Census 2005", National Statistics Centre, Vientiane, September 2005, Tables 2.1 & 2.3

[2] Population Census 2000, Key Indicators & Preliminary Results Table 2, and "Key Statistics of Thailand 2008", National Statistics Office 2008, national population figures as of 2005, provincial population statistics as of 2000

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**"Vulnerability Analysis and Mapping: Secondary Data Analysis, Lao PDR District Vulnerability Analysis, 2005 Update", World Food Programme, June 2005

^ "Lao PDR: Comprehensive Food Security & Vulnerability Analysis (CFSVA)", World Food Programme & European Commission, December 2007, Cambodia IFSHPC [ibid] 2007,

^^National Institute of Statistics, 2004, and Provincial Food Security Profiles for Stung Treng and Kratie 2005

*^ Cambodia Population Census 1998, Lao PDR Population Census 1995 Table 3B1, UNDP Thailand Human Development Report 2007, Table All.6

^**Cambodia MOP/WFP Poverty Estimates 2002, Table 7, Lao PDR Kakawni et al 2002, Table 10

^*^Ubon Ratchathani Provincial Community Development Office (2009)

^*^*Ubon Ratchathani Provincial Statistic Office (2008)

Thai poverty line 9

Agricutural and Co-Operative Office of Chiang Rai Province (2008)

Administrative Office, Chiang Rai Province and Agricultural and Co-Operative Office of Chiang Rai Province (2008)

Table 2.4: Key Global Poverty Statistics, including LMB countries

LMB Countries	Proportion undernourished population (%)		Prevalence underweight children <5 (%)		<5 mortality rate (%)	
	1990-92	2003-05	1988-92	2002-07	1990	2007
Cambodia	38.0%	26.0%	45.2%	28.4%	11.9%	9.1%
Lao PDR	27.0%	19.0%	44.3%	31.0%	16.3%	7.0%
Thailand	29.0%	17.0%	17.2%	7.0%	3.1%	0.7%
Vietnam	28.0%	14.0%	40.7%	20.2%	5.6%	1.5%

Source: Global Hunger Index 2009

Table 2.5: Case study provinces key education indicators

Country	Affected Riparian Province	% adult literacy rate (>15)		% schools completed*	School dropout rate*	
		Male	Female		Male	Female
Lao PDR[1]	Oudomxay	72.8	39.5	31.5	15.7	18.6
	Xayaboury	86.9	73.9	80.3	3.3	2.9
	Bokeo	72.3	44.5	27.5	11.3	10.2
	Luang Prabang	79.5	55.1	41.8	9.6	10.1
	Vientiane	88.3	70.8	58.4	6.3	6.4
	Champassack	89.9	74	47.3	9.1	9.4
Thailand[2]	Chiang Rai	87.3	77.2	NA	1.5 **	1.3 **
	Ubon Ratchathani	98.8	97.5	NA	0.4 **	0.4 **
Cambodia[3]	Stung Treng	65.4	58.4	NA	14	
	Kratie	75.7	44.5	NA	12	

Sources:

[1] "Population & Housing Census 2005", National Statistics Centre, Vientiane, September 2005, Tables 2.1 & 2.3

[2] UNDP Thailand Human Development Report 2007, Table All.2

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Table 2.6: Case study provincial statistics on key health indicators

		Mortality & Life Expectancy					Health Facilities		Malnutrition			
Country	**Affected Riparian Province**	**Overall infant mortality rate (28days-5yrs) per 1000 live births***	**Infant mortality rate by gender***		**Life expectancy by gender**		**% village health volunteers to population**	**No. of provincial hospitals**	**^^% prevalence of stunting (height for age)**	**^^% prevalence of wasting (weight for height)**	**^^% children underweight (weight for age)**	**^^ % child malnutrition**
			Boys	**Girls**	**Male**	**Female**						
Lao PDR[1]	Oudomxay	32%	3%	2%	57	60	0.25	1	ND	ND	ND	ND
	Xayaboury	19%	2%	1%	63	66	0.19	1	ND	ND	ND	ND
	Bokeo	18%	4%	2%	63	66	0.25	1	ND	ND	ND	ND
	Luang Prabang	25%	2%	2%	59	62	0.22	1	43.1	3.9	33.5	ND
	Vientiane	24%	2%	1%	65	68	0.16	1	34.9	6.5	32.9	ND
	Champassack	17%	1%	1%	60	63	0.21	1	46.2	10.1	49.5	40^
Thailand[2]	Chiang Rai	13 ###					1.95##	20#	ND	ND	ND	11.54 #+
	Ubon Ratchathani	9.2	Total 0.8 *^		67^	71^	1.88 *^^	23 *^^	15.3 *^	19.4 *^	8.24 *^	67^
Cambodia[3]	Stung Treng	12%						1	42	9.7	48.1	47.8
	Kratie	12%	ND	ND	ND	ND	ND	2	37.1	4.2	35.5	47.8

ND=No Data

Sources:

[1] "Population & Housing Census 2005", National Statistics Centre, Vientiane, September 2005, Tables 7.3-7.5

[2] Population Census 2000, Key Indicators & Preliminary Results Table 2

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*Figures rounded

^Figures for the whole country

^^Figures available for regional clusters, Laos these are north, central & south, MICS3 Lao Final Report 2006. Thailand these are north and northeast.

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Public Health Provincial Office of Chiang Rai (2008)

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#+ Health Promotion Devision, Department of Health (2007)

Table 2.7: Percentage case study provincial households with access to sanitation & clean water

Country	Affected Riparian Province	% hhs with accesss to safe drinking water*	% hhs with access to sanitation**
Lao PDR[1]	Oudomxay	14.1	28.1
	Xayaboury	15.4	55
	Bokeo	15.9	51.7
	Luang Prabang	13	26.5
	Vientiane	31.3	62.4
	Champassack	49.3	27.7
Thailand[2]	Chiang Rai	85.3	97.4
	Ubon Ratchathani	81.2	96.3
Cambodia[3]	Stung Treng	41.1	25
	Kratie	41.1	20

Sources:

[1] "Population & Housing Census 2005", National Statistics Centre, Vientiane, September 2005, Tables 8.5-8.7

*"safe drinking water" is defined here as households with either piped water or with a protected well or borehole

"unsafe water" is defined here as water sources easily accessible to contamination, e.g. unprotected well, river, stream, etc.

** "sanitation" means either a modern flush toilet, or a ceramic/cement pour-flush toilet

[2] Population Census 2000, Key Indicators & Preliminary Results Table 2

[3] UNDP Cambodia Human Development Report 2007, Figure 2.15

Table 2.8: Percentage case study provincial statistics on basic infrastructure

Country	Affected Riparian Province	% households with houses of permanent quality (wood/brick/ concrete)	% rural hhs without access to all-season roads*	Average distance to district centre(km)^	% hhs with electricity
Lao PDR[1]	Oudomxay	41.4	45	22.2	26.6
	Xayaboury	64.8	11.5	49.6	42.6
	Bokeo	38.6	36	34.1	38.7
	Luang Prabang	41.9	38.2	31.1	44.2
	Vientiane	54.7	10	20.6	82.3
	Champassack	72.2	36	31.4	60.2
Thailand[2]	Chiang Rai	87.6	63.2*^	51.7 *^^	92.3
	Ubon Ratchathani	93.8	58.2*^	63 *^^	85.8
Cambodia[3]	Stung Treng	ND	ND	ND	14.1
	Kratie	ND	ND	ND	13.4

Sources: (ND=No Data)

[1] "Population & Housing Census 2005", National Statistics Centre, Vientiane, September 2005, Tables 8.1-8.3

*Ibid, Table 3.1, UNDP Thailand Human Development Report 2007 Table All.7

^ "Lao PDR: Comprehensive Food Security & Vulnerability Analysis (CFSVA)", World Food Programme & European Commission, December 2007

[2] Population Census 2000, Key Indicators & Preliminary Results Table 2

[3] Population Census 1998, Population Map

*^Thailand figures refer to % of villages without access, not households

*^^http://thai.tourismthailand.org/

Table 2.9: Case study provincial statistics on key employment sources

MRC Zone	Country	Affected Riparian Province	% Population >10 yrs. economically active			Agricultural Employment (% population - including agriculture & livestock)			Fisheries Employment (% population)			Industrial Employment (% population)			Non-Farm Employment (% population)			Unemployed (% population)			Daily wage rates for unskilled labour US$ 2006^
			Total	Female	Male	Total	Female	Male	Total	Female	Male	Total	Female	Male	Total	Female	Male	Total	Female	Male	
Zone 2	Lao PDR[1]	Oudomxay	67	70.5	70.26	87.7	90.5	84.9	0.1	0	0.1	0	0	0	12.3	9.5	15.1	0.8	0.8	0.8	1.74
		Xayaboury	68	77.46	71.9	86.2	89	83.4	0	0	0	0	0	0	13.8	10.9	16.6	0.3	0.3	0.4	1.85
		Bokeo	64.6	73.1	72.7	84.5	87	82.1	0.1	0.1	0.1	0	0	0	15.4	12.9	17.9	0.7	0.7	0.6	1.65
		Luang Prabang	65.5	72.6	72.4	81.6	83.5	79.7	0.1	0.1	0.1	0	0	0	18.3	16.5	20.2	0.3	0.3	0.4	1.47
	Thailand[2]	Chiang Rai	57.3	45.5	54.5	33.4 #	31.7 #	35.0 #	0.02#	0.02#	0.03#	5.12 ##			40.3#	40.8#	39.6#	1.7	1.7	1.6	4.67^^**
Zone 3	Lao PDR[1]	Vientiane	62	76	76	73.2	76.7	70.1	0.1	0.1	0.1	0	0	0	26.6	23.3	29.7	1.2	1.1	1,2	2.27
	Thailand[2]	Champassack	67.8	74.5	73.6	80.3	83	77.7	0	0	0	0	0	0	19.6	17	22.3	0.7	0.7	0.7	2.03
	Thailand[2]	Ubon Ratchathani	70.7 *	60.6	81.4	50	49.0 **	51.0 **	0.8 ***	0.4	1.2	6.0 *^	6.7	5.5	44.6 **^	44.0	45.4	0.62 *^*	0.64	0.61	4.58 ^^*
Zone 4	Cambodia[3]	Stung Treng																			0.96
		Kratie	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.96

Sources:

[1] "Population & Housing Census 2005", National Statistics Centre, Vientiane, September 2005, Tables 5.3-5.7

^ "Lao PDR: Comprehensive Food Security & Vulnerability Analysis (CFSVA)", World Food Programme & European Commission, December 2007. Approximately 8500kip = US$1

[2] Population Census 2000, Key Indicators & Preliminary Results Table 2

[3] Population Census 1998, Population Map

* Ubon Ratchathani Statistic Office (2008)

** Ubon Ratchathani Provincial Agriculture Office (2008)

*** Ubon Ratchathani Provincial Statistic Office (2008)

*^ Ubon Ratchathani Provincial Statistic Office (2008)

**^ Ubon Ratchathani Provincial Statistic Office (2008)

^^* Ubon Ratchathani Provincial Statistic Office (2008)

^^**Chiang Rai Provincial Statistic Office (2008)

Chiang Rai Provincial Office (2009)

Chiang Rai Provincial Statistic Office (-)

ANNEX 3: SUMMARISED LOWER MEKONG BASIN DISTRICT CASE STUDY STATISTICS

Province	District	District Population			Population growth in last 10 years (%)	Population density/km2	% Rural & urban population in district	
		Male	Female	Total			% Rural	% Urban
Bokeo	Paktha	9,109	9,193	18,302	2.3	24	83	16
Oudomxay	Pakbeng	12,982	14,130	27,112	3.2	33	87.27	12.73
Luangprabang	Nan	14,414	14,209	28,623	1.2	28	81.5	18.5
Sayaboury	Sayaboury	32,515	32,898	65,413	1.5	17	91.57	8.43
	Paklay	33,262	32,135	65,397	3.4	30	79	21
Vientiane	Med	10,269	9,724	19,993	2.7	16	84.4	15.6
Champasack	Pakse	39,766	36,602	76,368	2.6	611	0	100
	Khong	38,497	45,008	86,505	2.2	50	81	19
Chiang Rai	Chiang Khong	31,481	31,414	62,895	-5.17	75	82	18
Ubon Ratchatha	Khong Chiam	16,107	15,259	31,366	1.1	44	92	8
	Overall totals:	190,814	193,899	387,713				

Table 3.1: Demography of Lao PDR & Thailand Case Study Districts

Sources: Thailand - Administrative Office of Chiang Khong (2008), Immigration Office at Chiang Khong (2009), Community Development Office of Chiang Khong (2009), Statistic Office of Chiang Rai Province (2008), Final Report of Environment Impact on three districts of Chiang Rai by caculating the birth rate between 1997-2007

Lao PDR – District Governors' Offices, District Planning Offices

Table 3.2: Percentage poor families in Lao & Thai case study districts

Province	District	Provincial population	District population	% district of total provincial population	Total no. families	Total poor families in district	% poor families
Bokeo	Paktha	145263	18,302	12.60%	3,586	1,185	33.0%
Oudomxay	Pakbeng	265179	27,112	10.25	4,115	2357	57.3%
Luangprabang	Nan	407039	28,623	7%	5,313	115	2.2%
Sayaboury	Sayaboury	338669	65,413	19.30%	12,082	2017	16.7%
	Paklay		65,397	19.30%	12,850	692	5.4%
Vientiane	Med	388895	19,993	5.10%	3929	758	19.3%
Champasack	Pakse	607370	76,368	12.60%	12,630	0	0.0%
	Khong		86,505	14.2%	14,824	261	1.8%
Chiang Rai	Chiang Khong	1129701	62,895	5.6%	22,473	38	0.2%
Ubon Ratchathani	Khong Chiam	1691441	31,366	1.9%	5,633	80	1.4%

Sources: Lao PDR district authorities in case study districts, 2010; Thailand, Administrative Office of Chiang Khong and District Office of Khong Chiam, 2010

Table 3.3: Educational statistics for Lao and Thai case study districts

Province	District	No. primary schools	No. children attending primary school			No. secondary schools	No. children attending secondary school			% literate persons	
			Boys	Girls	Total		Boys	Girls	Total	% Male	% Female
Bokeo	Paktha	40	1734	1267	3001	1	526	306	832	30	15
Oudomxay	Pakbeng	48	2475	2029	4504	3	568	263	831	24	37
Luangprabang	Nan	49	1702	2383	4085	2	1233	943	2176	40	35
Sayaboury	Sayaboury	95	6386	5426	11812	83	4015	3065	7080	40	40
	Paklay	69	5206	4681	9887	13	3372	2642	6014	40	40
Vientiane	Med	36	2007	1230	3237	4	1129	485	1614	35	15
Champasack	Pakse	44	4451	4172	8623	10	4799	4144	8943	50	50
	Khong	135	6500	5601	12101	18	3240	2360	5600	50	50
Chiang Rai	Chiang Khong	25	2218	2154	4372	12	1670	1835	3505	96.5	
Ubon Ratchathani	Khong Chiam	51	1819	1695	3514	14	472	456	982	98.6	

Sources: Lao PDR district authorities in case study districts, 2010; Thailand, Statistics Office of Chiang Rai Province 2008, Statistics Office of Ubon Ratchathani District, 2008

Table 3.4: Health facilities and workers in Lao and Thai case study districts

Province	District	No. health clinics	No. hospitals	No. district health staff	No. village heath workers	No. villages per district	Population
Bokeo	Paktha	4	1	23	61	36	18,302
Oudomxay	Pakbeng	6	1	18	65	55	27,112
Luangprabang	Nan	7	1	30	47	54	28,623
Sayaboury	Sayaboury	12	1	62	111	83	65,413
	Paklay	8	1	40	150	71	65,397
Vientiane	Med	4	1	22	29	33	19,993
Champasack	Pakse	3	1	34	35	42	76,368
	Khong	12	1	35	98	114	86,505
Chiang Rai	Chiang Khong	17	1	38	55	101	62,895
Ubon Ratchathani	Khong Chiam	5	1	171	683	52	31,366

Sources: Lao PDR district authorities, district Lao Women's Union, District Health Offices, 2010; Thailand, Annual Report of Health Office in Chiang Rai province 2008, Chiang Khong Crown Prince Hospital, Public Health Office of Chiang Khong district 2009, Community Developoment Office of Chiang Khong district 2009, Public Health Office of Khong Chiam 2007

Table 3.5: Main causes of morbidity and mortality in Lao & Thai case study districts

Province	District	Main causes of morbidity (in order of importance)										
		Typhoid	Dysentery	Diarrhoea	Pulmonary	Dengue	High blood pressure	Endocrinal	Respiratory	Intestinal	Infectious disease (not specified)	Coronary
Bokeo	Paktha	4	2	1	3	2	ND	ND	ND	ND	ND	ND
Oudomxay	Pakbeng	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Luangprabang	Nan	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Sayaboury	Sayaboury	4	2	1	3	4	ND	ND	ND	ND	ND	ND
	Paklay	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Vientiane	Med	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Champasack	Pakse	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	Khong	2	ND	ND	1	2	ND	ND	ND	ND	ND	ND
Chiang Rai	Chiang Khong	ND	ND	ND	5	ND	1	2	3	4	ND	ND
Ubon Ratchathani	Khong Chiam	ND	ND	ND	ND	ND	ND	2	1	3	4	5

Province	District	No. of villages with clean water supply	No. of families with clean water supply	No. of villages with sanitation	% families with sanitation	STD's/HIV/AIDS monitoring programme	Does district have any programs to prevent human trafficking?	Does the district have a micronutrient program? If yes, how long has this program been running?	How many families in the district do not have food security more than 6 month of the year?	How many villages have experience the highest food insecurity ?
Bokeo	Paktha	31	3187	31	67%	✓	x	No	246	0
Oudomxay	Pakbeng	48	3127	48	69%	✓	x	No	2357	39
Luangprabang	Nan	47	2545	30	14.52%	✓	x	No	5198	ND
Sayaboury	Sayaboury	20	10028	46.48	56.00%	✓	x	N0	4749	17
	Paklay	55	5110	55	78.45%	✓	x	No	692	0
Vientiane	Med	22	1157	22	33.96%	✓	x	No	758	18
Champasack	Pakse	42	12630	42	100.00%	✓	x	No	0	0
	Khong	57	7382	42	70.00%	✓	x	No	0	0
Chiang Rai	Chiang Khong	101	22,158	101		✓	✓	No	ND	ND
Ubon Ratchathani	Khong Chiam	10	1045	52	96.6	✓	✓	No	0	0

Table 3.6: Water, Sanitation, Health Monitoring and Food Security in Lao and Thai case study districts

Sources: Lao PDR district authorities, district Lao Women's Union, District Health Offices, 2010; Thailand, Annual Report of Health Office in Chiang Rai province 2008, Chiang Khong Crown Prince Hospital, Public Health Office of Chiang Khong district 2009, Community Developoment Office of Chiang Khong district 2009, Public Health Office of Khong Chiam 2007