



Mekong River Commission

**Initiative on Sustainable Hydropower
Work Plan**

March 2009

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List of Abbreviations

ADB	Asian Development Bank
AFD	Agence Française de Développement
ASEAN	Association of Southeast Asian Nations
BDP	Basin Development Plan (of MRC)
CIA	Cumulative Impact Assessment
CTA	Chief Technical Adviser
DSM	Demand Side Management
ECSHD	Environmental Considerations for Sustainable Hydropower Development
EIA	Environmental Impact Assessment
EP	Environment Programme (of MRC)
EPF	Environment Protection Fund (in Lao PDR)
FP	Fisheries Programme (of MRC)
GMS	Greater Mekong Subregion
IBFM	Integrated Basin Flow Management
ICCS	International Cooperation and Communications Section (of MRC)
IFI	International Finance Institution
IKMP	Information and Knowledge Management Programme (of MRC)
ISH	Initiative on Sustainable Hydropower (of MRC)
JAIF	Japan ASEAN Integration Fund
JC	Joint Committee (of MRC)
LMB	Lower Mekong Basin
MRC	Mekong River Commission
MRCS	Mekong River Commission Secretariat
NP	Navigation Programme (of MRC)
NMC	National Mekong Committee
PNPCA	Procedures for Notification, Prior Consultation and Agreement (under the 1995 Mekong Agreement)
SEA	Strategic Environmental Assessment
UMB	Upper Mekong Basin
UNEP	United Nations Environment Programme

Executive Summary

MRC approved its Hydropower Strategy in 2001 and drafted a Concept Note for a hydropower programme in 2005.

This is now being taken forward by MRC as a cross-cutting Initiative on Sustainable Hydropower (ISH). Prior to formal start-up of the Initiative, a number of strategic directions identified under the Strategy are being followed by related MRC Programmes and a number of the components under the Concept Note are already being actively implemented, particularly under the Basin Development Plan. The achievements to date are summarized in sections 1.4.1 and 1.4.2 of this document.

A Discussion Brief building on these achievements and outlining a multi-track approach to formulation and implementation for a hydropower programme was presented to the Joint Committee at its Informal Meeting on 19 June 2008. Funding for its initial stages was secured and the Joint Committee stressed the urgency in defining the scope of the programme and its components.

This draft Work Plan for the Initiative on Sustainable Hydropower is based largely on the Discussion Brief of 19 June 2008, opinions and comments received during National Consultations in all four Member Countries during July and August 2008, the results of the Regional Multi-Stakeholder Consultation meeting held in Vientiane on 27 September 2008, and a subsequent second round of National Consultations held in November and December 2008. It reflects the added value of MRC as a regional organization, the importance of demonstrating relevance to agencies responsible for hydropower development as well as developers and other stakeholders, coordination with MRC Programmes, the urgency associated with current rapid pace of development initiatives and the importance of broad participation in its activities.

Those activities which have already been initiated in 2008, using available funds by mid-July 2008, are aimed at improving understanding of the regional implications of hydropower projects in the Basin. Some aspects such as changes in the flow regime, water quality and sedimentation are already incorporated into the study of cumulative impacts of various development scenarios under the Basin Development Plan and existing MRC Programmes.

A particular focus has been required on addressing one of the most important questions facing mainstream hydropower development – to what extent can the barrier effect of mainstream dams be minimized or successfully mitigated? This issue goes beyond the ability of any single developer, line agency or consultant to answer and requires the broader regional perspective and independent analytic approach that MRC can bring through convening of an Expert Group of international and riparian professionals and applied scientists. The outcome will include an assessment of options to be used in discussions on the appropriate balance or trade-off among economic growth, poverty reduction and sustaining environmental services of the river, including considerations of the distribution of benefits and costs.

Similarly, measures have been already undertaken to facilitate and promote dialogue and exchange of information on current hydropower developments in the basin. In December 2008 a Developers Workshop was convened by the Department of Electricity, Ministry of Energy and Mines, Lao PDR, focussing on recent proposals for mainstream Mekong hydropower schemes in

the northern portion of the Lower Mekong Basin. Developers and promoters of the projects were apprised of the roles and responsibilities of the Member States under the 1995 Mekong Agreement and the contribution MRC can make to ensuring a regionally-coordinated and equitable development of the hydropower resources of the Basin.

A medium to longer-term perspective underlies the proposed Work Plan for MRC's Initiative on Sustainable Hydropower. It incorporates two principal types of activity.

The first type of activity would see the Initiative as a facilitator of dialogue at different levels on key issues facing the hydropower sector. No other organisation has the independence or credibility to reach out to the full range of stakeholders. Four levels of dialogue have been initially identified: i) ministerial briefings across relevant sectors in each of the member countries aimed at discussing good practice and disseminating the outcomes of the Initiative, as well as dialogue with line agencies, ii) dialogue meetings among private sector developers and financiers to explore areas of improving performance from a basin perspective and ensuring coordination on environmental mitigation measures, iii) regular multi-stakeholder consultation, starting with the Regional Multi-Stakeholder Consultation held on 25-27 September 2008, and followed by a structured debate on key issues and feedback on the role and direction of the Initiative; and iv) continued dialogue with China as an upstream riparian and sponsor of projects in the lower basin.

The second type of activity would build on and share knowledge, making available the vast array of experience already gained around the world with integrating improved governance, social and environmental aspects into hydropower development. It would involve activities such as expanding MRC's database on existing, planned and proposed hydropower projects; improving availability of environmental baseline data; building capacity for strategic environmental assessment through a case study covering the mainstream of the Lower Mekong Basin; examining the scope for effective fish passage measures for dam projects; supporting the Navigation Programme in developing standard specifications and protocols for navigation locks; supporting the Environment Programme to implement the initiative "Environmental Considerations for Sustainable Hydropower Development"; reviewing policy options for benefit sharing from hydropower projects, identifying financing mechanisms that can provide incentives for developers and promoters of projects to raise the performance of projects from a sustainability perspective; building capacity for independent monitoring among respective line agencies; and carrying out an initial scoping assessment of the potential for small-scale decentralized hydropower for rural communities.

It is envisaged that the Initiative on Sustainable Hydropower will be implemented by a Coordination Team based in MRCS, supported by specialist consultants and institutions as required. It is proposed that a Hydropower Steering Committee, comprising representatives of the NMCs and high-level officials of relevant national line agencies, will be established to advise the MRC on Mekong hydropower issues, to provide guidance on the work of the Initiative and to evaluate the results of the various activities described in this Work Plan.

A detailed budget estimate will be prepared following finalisation of the scope and precise content of the Initiative. At this stage a tentative estimated budget for the 4-year period 2008-2011 is in the order of \$7.3 million.

1 Background

1.1 Hydropower Development Context

Hydropower is an important resource of the Mekong Basin. It has the potential to satisfy growing national and regional electricity needs (see Table 1).

Table 1: Regional Power Demand Forecasts (MW)

Year	2005	2010	2015	2020	2025
MRC Member Countries					
Cambodia ^{1/}	302	407	699		
Lao PDR ^{2/}	291	648	1,216	1,487	
Thailand ^{3/}	20,538	25,612	33,897	44,695	
Vietnam ^{4/}	9,255	20,000	31,495	50,000	68,440
MRC Dialogue Partners					
China (Southern Power Grid) ^{5/}	69,590	114,300			
Myanmar ^{6/}	966	1,593			

1/ Cambodia: World Bank, “Cambodia Energy Sector Strategy Review“, Issues Paper, April, 2006.

2/ Lao PDR: Electricité du Laos, “Power Development Plan (PDP 2007-2016)“, Vientiane, March 2008.

3/ Thailand: Energy Planning & Policy Office (EPPO), “Energy Statistics“, Ministry of Energy, (http://www.eppo.go.th/info/5electricity_stat.htm) and Electricity Generating Authority of Thailand (EGAT), “Updated Status of Thailand Power System“, Presentation at the 7th GMS Focal Group (FG) Meeting, Vietnam, November 2008.

4/ Vietnam: Institute of Energy, “Vietnam Energy Review and Power Development Plan Period 2006 - 2015 with Outlook to 2025“, presentation at Asian Energy Security Workshop 2007, Beijing, November 2007, and Vietnam Ministry of Industry and Trade, “Meeting Rapid Electricity Demand Growth“, presentation at Regional Multi-Stakeholder Consultation on MRC’s Hydropower Programme, September 2008.

5/ China: China Southern Power Grid Co. Ltd., “Update for China Southern Power Grid Planning & GMS Cooperation Projects“, Presentation at the 7th GMS Focal Group (FG) Meeting, Vietnam, November 2008.

6/ Purdue Energy Modeling Research Groups (PEMRG) “Modeling of Electricity Capacity Expansions in a Regional Framework of the Asean Nations and Yunnan Province PRC“, Purdue University, USA, September 2004.

For some countries in the region, hydropower is one of the main exploitable natural resources. As such, hydropower now represents a major source of export earnings and potentially even more so in the future. It has the potential to contribute to economic development in a sustainable way when planned and implemented appropriately. A regional approach to power supply, allowing hydropower to be developed when it competes effectively with other supply sources, taking costs and environmental and socio-economic aspects fully into consideration, can imply significant cost savings.

Only a minor share of the hydropower potential in the Lower Mekong Basin has been developed so far. While Thailand has developed most of its potential on the tributaries, Laos has developed only a few of its many possible projects. Cambodia is yet to construct its first major hydropower project within the Basin. Vietnam is already well advanced in developing its full hydropower potential in its part of the Basin. In the Upper Mekong Basin, China has an ambitious development plan for mainstream projects, and three large run-of-river projects have already been completed.

As shown in Table 2, hydropower projects with a total installed capacity of 2,612 MW are already in operation in the Lower Mekong Basin, while projects with a further 3,574 MW are currently under construction. All of these projects are located on tributaries. Nearly half of them enable some degree of seasonal regulation of streamflow. The potential for over 20,000 MW additional installed capacity has been identified, predominantly in projects in Lao PDR and Cambodia and including a number of mainstream schemes.

Table 2: Installed Capacity of Existing, Under Construction and Planned/Proposed Hydropower Projects in the Lower Mekong Basin

Country	Installed Capacity (MW)			Total
	Existing	Under Construction	Planned / Proposed	
Cambodia	1	-	5,589	5,590
Lao PDR	662	2,558	17,686	20,907
Thailand	745	-	-	745
Vietnam	1,204	1,016	299	2,519
Total	2,612	3,574	23,574	29,760

Source: Hydropower Database, Basin Development Plan, MRC (Status 4 February 2009), containing information received from Cambodia (13 November 2008), Lao PDR (21 January 2008), Thailand (20 May 2008) and Vietnam (17 December 2008).

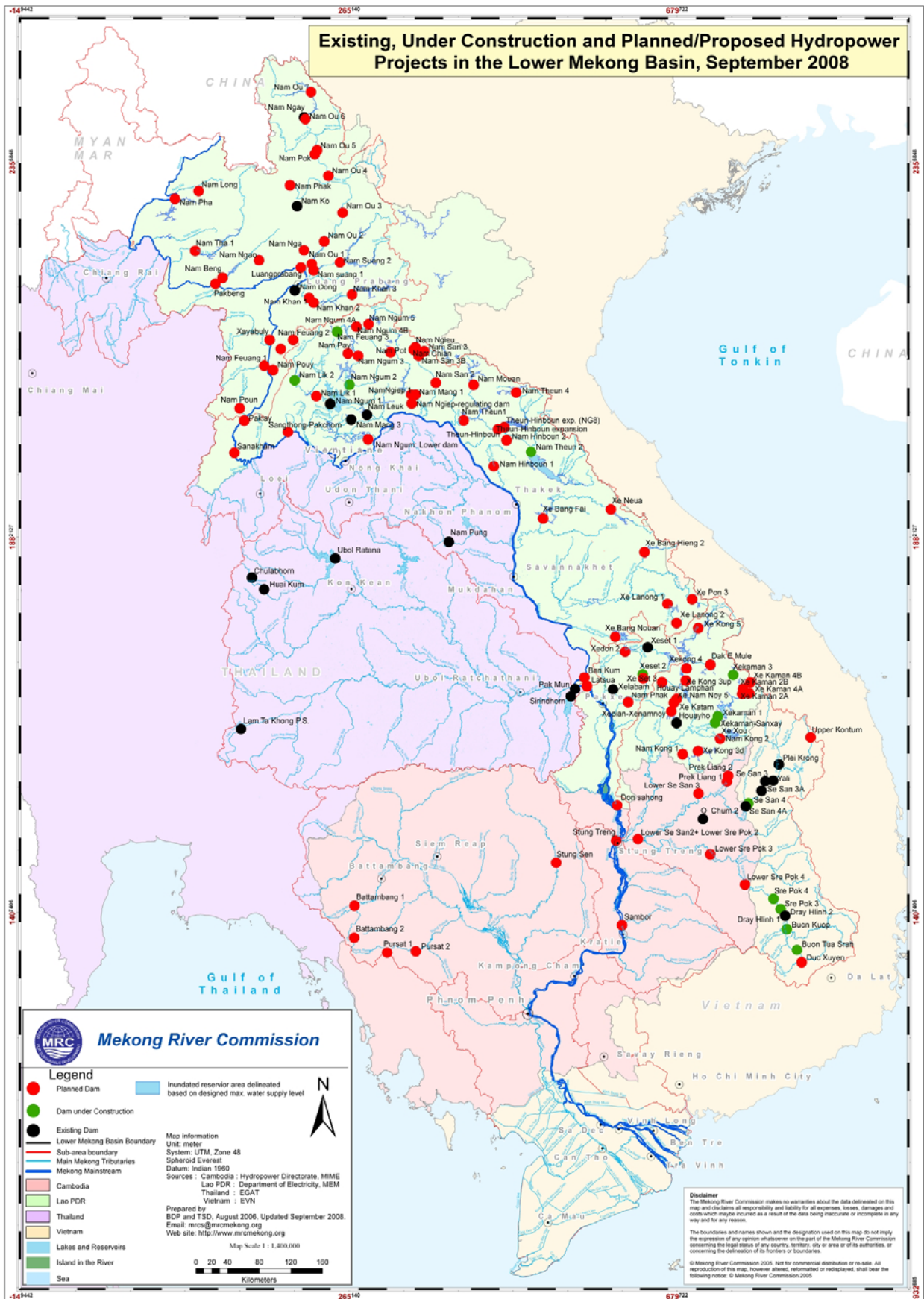
The map overleaf shows the locations of all the existing, under construction and planned/proposed projects in the present version of BDP's Hydropower Database.

Table 3 shows the major existing and planned mainstream hydropower projects in the Upper Mekong Basin in China. While the three existing schemes have limited capacity to regulate flows, two of the projects now under construction will have major storage capacity and therefore significant influence on the seasonal distribution of flow entering the Lower Mekong Basin.

Table 3: Existing, Under Construction and Planned Mainstream Hydropower Projects in the Upper Mekong Basin

Project	Status	Storage (MCM) Total / Active	Installed Capacity (MW)	Power Plant Commissioning
Manwan	Existing	920 / 257	1,500	1993-1996
Dachaoshan	Existing	933 / 367	1,350	2001-2004
Jinghong	Existing	1,233 / 249	1,750	2008-
Xiaowan	Construction	14,560 / 9,900	4,200	2010-2014
Gonguoqiao	Construction	510 / 120	750	2012
Nuozhadu	Construction	22,400 / 12,300	5,500	2014
Mengsong	Planned	- / 0.9	600	Before 2025
Ganlanba	Planned	- / 0.2	150	Before 2025
Total :			14,800	

Source: Norplan and EcoLao, "Cumulative Impact Assessment and Nam Theun 2 Contributions", Final Report to Government of Lao PDR and Asian Development Bank, October 2004 (except Jinghong: People's Daily Online, 19 June 2008).



Source: Hydropower Database, Basin Development Plan, MRC.

A number of mainstream hydropower projects have also been proposed at locations in the Lower Mekong Basin. Table 4 shows those projects for which developers are preparing feasibility studies through Memoranda of Understanding (MOU) or Project Development Agreements (PDA). All have very limited storage capacity and are proposed as run-of-river projects. They typically have dam heights in the range 10-70 m. None of the projects has yet reached the stage of notification or prior consultation under the 1995 Mekong Agreement.

Table 4: Proposed Mainstream Hydropower Projects in the Lower Mekong Basin

Project	Country	Installed Capacity (MW)
Pak Beng	Laos	1,230
Luang Prabang	Laos	1,410
Xayaboury	Laos	1,260
Pak Lay	Laos	1,320
Sanakham	Laos	1,200
Pak Chom	Laos - Thailand	1,079
Ban Koum	Laos - Thailand	1,872
Lat Sua	Laos	800
Don Sahong	Laos	360
Stung Treng	Cambodia	980
Sambor	Cambodia	3,300
	Total :	14,811

Source: Basin Development Plan, MRC (Status 4 February 2009)

As indicated from BDPs preliminary modelling results, the seasonal storage projects in China and those on the major lower-basin tributaries (Nam Tha, Nam Ou, Nam Ngum, Nam Theun) will have a significant cumulative impact on mainstream flows in the LMB. The resulting increased dry-season flows will also have the effect of enhancing the economic viability of the proposed mainstream hydropower projects in Lao PDR and Cambodia. The storage projects will also offer the limited possibility of some degree of flood control in the middle and lower Mekong reaches.

1.2 MRC Mandate in Hydropower Development

The overriding aim of the MRC Initiative on Sustainable Hydropower is to facilitate implementation of the 1995 Mekong Agreement in a sector that has been of concern for Mekong cooperation since its beginning.

The 1995 Agreement on the Co-operation for the Sustainable Development of the Mekong River provides a legal framework for co-operation that commits the four riparian countries to “*sustainable development, utilisation, conservation and management of the Mekong River Basin ... for social and economic development...*” (preamble to the Agreement).

Article 1 of the Agreement expresses the intention of the four states to cooperate in all fields of sustainable development, utilisation, management and conservation of water and related resources of the Mekong river basin, including: irrigation, hydropower, navigation, flood control, fisheries, timber floating, recreation and tourism. The article also states that activities should be carried out in a manner that optimises multiple-use and mutual benefits, and minimises harmful effects. The latter is reinforced in Article 3 which speaks of protection of the environment and ecological balance.

Article 2 emphasises joint and/or basin-wide development projects and basin programmes through the formulation of a Basin Development Plan which would be used to identify, categorise and prioritise the projects and programmes to seek assistance for and to implement at the Basin level.

Article 5 provides for the reasonable and equitable use of the waters of the river system with reference to rules for water utilisation to be prepared, while Article 6 deals with the maintenance of flows on the mainstream in relation to average monthly minimum flows and with limits on maximum daily peak flows.

Article 26 on Rules for Water Utilization and Inter-Basin Diversions provides for implementation of Articles 5 and 6, and is the basis for the procedural tasks to be performed by MRC in relation to the Procedures for Notification, Prior Consultation and Agreement (PNPCA)¹ on intra-basin uses and inter-basin diversions for mainstream and tributary hydropower development and other purposes. These include:

- Receipt and checking for completeness of Notifications and Prior Consultations;
- Entering the relevant data and information into the data and information systems of the MRCS;
- Review and analysis of the submitted information;
- Provision of technical additional information, data, evaluations, support and advice for use in meetings requested by Member Countries; and
- Moderation of the consultation process.

It may be noted however that on its own, the receipt and review of Notifications and Prior Consultations on a case-by-case basis would involve serious limitations in regard to understanding and assessing the cumulative impacts of water resource developments over time. An integrated / strategic assessment framework is therefore required, within which the Notifications and Prior Consultations can be considered in a multi-project context.

Based on the 1995 Mekong Agreement, the functions of the MRC can be divided into three broad, interrelated categories: planning, knowledge generation and dissemination, and programme implementation. MRC's current policies and strategies for carrying out these functions are defined in the MRC Strategic Plan 2006-2010.

¹ Mekong River Commission, "*Procedures for Notification, Prior Consultation and Agreement*", Approved by MRC Council on 30 November 2003.

The Strategic Plan 2006-2010 identifies the four roles of the MRC : i) knowledge management and capacity development, ii) provision of a framework for regional cooperation, iii) environmental monitoring and protection, and iv) promotion of sustainable development. These form the basis on which MRC sectoral and cross-cutting programmes work together in an integrated structure under the Basin Development Plan (BDP). The Initiative on Sustainable Hydropower (ISH) presented in this document will provide a framework and focal point within MRC for hydropower activities and coordination within MRC's sectoral programmes.

Three broad objectives have been identified as central to the Strategic Plan 2006-2010:

- Tangible results focussed on poverty reduction through sustainable development;
- Creating ownership and value-added with a broadened interpretation to include better integration of MRC and national development plans; and
- Adoption of an integrated water resource management approach which is necessary for the MRC to jointly promote development and conservation to ensure sustainable cooperation for the utilisation of the Mekong's common resources.

These objectives of the Strategic Plan, together with the mandate provided by the 1995 Agreement and other regional frameworks and initiatives, form the basis which underpins the work plan for the Initiative on Sustainable Hydropower laid out in the following sections of this document.

1.3 National Policies and Basin-wide Institutional Framework

Hydropower development in the Lower Mekong Basin needs to be seen within the context of the national policies of the individual riparian states not only with regard to overall water resources development but also related land resources development (mining, forestry, watershed protection, etc.) as these will be important in relation to sustainability of projects.

Background information on water resources planning and management in the MRC Member Countries can be found in the MRC report "Strategic Directions for Integrated Water Resources Management (IWRM)", 2005. Table 5, taken from the report by King et al (2007)², briefly summarises some of the steps taken by the Member Countries as well as China and Myanmar to incorporate IWRM in their policy and legal frameworks.

Since 2005 coordinating bodies for water resources management at national level have become a feature of new institutional structures, for example the National Water Resources Council in Vietnam and the National Water Resources Committee in Thailand. Some are formal policy making bodies, like the Thai and Vietnamese apex bodies while others have a less formal structure without policy making authority, such as in Cambodia.

² King, P, Bird, J. and Haas, L., "Environmental Criteria for Hydropower Development in the Mekong Region", Technical Report to Asian Development Bank, Mekong River Commission and World Wildlife Fund for Nature, March 2007.

Table 5 : Summary of National Coordination Arrangements in Water Resources Planning

Cambodia	<p>Water resources policy approved in January 2005 reflecting principles of IWRM. The Water Resources Management Law was promulgated by the King on 29 July 2007. The Cambodia National Mekong Committee is mandated for coordination across other agencies, although there is some overlap with the mandate of the Ministry of Water Resources and Meteorology which is formulating a national water strategy with input from related sector agencies.</p> <p>Irrigation features strongly in the Government's 2004 'Rectangular Strategy', the 'National Strategic Development Plan (2006-2010)' and the 'Rectangular Strategy Phase II' launched in September 2008. It is part of two of the strategic growth areas of i) agricultural productivity, diversity and competitiveness, and ii) rehabilitation and construction of physical infrastructure. Given its reliance on neighbouring countries, the Rectangular Strategy Phase II features international integration as an important enabling environment.</p>
China	<p>A new National Water Law based on the principles of IWRM was passed in 2002 and is being implemented at river basin and provincial levels. River Basin Commissions are developing a governance structure with public participation. Cross-sectoral coordination is the responsibility of National Commissions of Development and the State Council and governments at provincial level.</p>
Lao PDR	<p>IWRM is a basic framework of the Policy on Water and Water Resources drafted in 2000. A new water law was prepared in 2005 and is awaiting approval. Water Resources Coordination Committee prepared a water sector strategy and action plan which includes initiation of an IWRM approach in important river basins.</p>
Myanmar	<p>Myanmar Water Resources Committee (a coordinating body including the Dept. of Hydropower of the Ministry of Electric Power). Water Policy developed in 2005 and a new Water Law promulgated in 2006 including a proposal to establish a Water Resources Commission. The 2003 Myanmar Water Vision was prepared by the Irrigation Department to raise awareness of future issues related to a large infrastructure program.</p>
Thailand	<p>Water Resources Policy adopted in 2001 and draft water resources law in 2005 that embodies IWRM principles and formalizes a National Water Resources Committee with considerable influence in policy and strategy development. The Electricity Generating Authority of Thailand is a member of the Committee. The draft law embodies the principle of decentralization to 25 river basin management committees which signifies a considerable advance in the area of stakeholder participation. A National Water Resources Strategy Plan is currently being formulated.</p>
Vietnam	<p>The 1998 Water Law is currently being reviewed to reflect changes in institutional structures and principles of IWRM. National Water Resources Council established and chaired by Deputy Prime Minister and with Ministry of Natural Resources and Environment as Secretariat. National Water Resources Management Strategy approved in 2006. A number of river basin organizations have been established but these are highly centralized and have so far had limited influence. As well as its large hydropower program Viet Nam has a significant program for irrigation development and flood management, both involving dam construction.</p>

Source: King, P, Bird, J. and Haas, L., "Environmental Criteria for Hydropower Development in the Mekong Region", Technical Report to Asian Development Bank, Mekong River Commission and World Wildlife Fund for Nature, March 2007 (Updated for Cambodia).

Only Vietnam has so far included Strategic Environmental Analysis (SEA) into its legal framework. Lao PDR has however developed a forward looking policy on social and environmental aspects of hydropower development³. Environmental issues are recognized in general terms in Cambodia's 1994 Power Sector Development Policy although not at the level of detailed guidance. Thailand is not planning new hydropower projects, but will increase its import of electricity from Lao PDR. In the recent High Level Forum on Hydropower between Thailand and Lao PDR, there was a joint commitment that reconfirmed support to implementation of the policy environment on social and environmental issues and need to take into account findings of project specific impact assessments. Vietnam is also at an advanced stage of developing a policy on budget-sharing from hydropower revenues targeted at community development and watershed management activities

Within the new investment context established by the countries of the Lower Mekong basin, hydropower development is now mainly private sector driven. This involves shorter planning cycles than with the conventional public sector approach, and therefore requires early identification of key planning criteria to ensure social environmental concerns are addressed and the risks and responsibilities identified.

Annex 2 presents a flow chart of the planning process for private-public hydropower projects in Lao PDR and shows the importance of the procedures for granting of concessions and the consequences for country planning systems vis-a-vis openness and consultation on draft reports, etc.

1.4 Evolution of Hydropower Activities at MRC

The MRC initiated formulation of its hydropower activities under the mandate of the 1995 Agreement with production of the following documents:

- MRC Hydropower Strategy, 2001.
- Concept Paper on a MRC hydropower programme, 2005.

These two documents are summarised in the following subsections. Developments since 2005 are outlined subsequently.

1.4.1 MRC Hydropower Strategy, 2001

The MRC Hydropower Strategy prepared by international consultants in 2001 and reviewed by national workshops was a comprehensive attempt to interpret emerging international good practice and lay out what it meant for the Mekong region.

³ National Policy on Environmental and Social Sustainability of the Hydropower Sector in Lao PDR, No 561/CPI dated 7 June 2005. It promotes an integrated approach to river basin management with multiple projects on a single river. Cumulative impacts are to be recognized and measures required for their mitigation. The main elements of the Policy include: environmental assessment and management plans; a broad definition of project affected people and their right to sustainable development options; watershed management and conservation including offsets and adaptive management plans; free, prior and informed consultation; disclosure of project consultation reports, impact assessments, mitigation plans etc; compliance with oversight from third party agencies; and project revenues to cover the cost of environmental and social safeguards through the Environmental Protection Fund (EPF) established in June 2005

The development objective for the Strategy was:

The increasing demand for affordable electric energy in the MRC member countries is met with minimal negative impacts on the environment and local people, thereby promoting economic growth for the countries' mutual benefit.

The immediate objective was:

Hydropower resources of the Mekong mainstream and its tributaries are developed according to true least-cost planning, fully considering environmental and social impacts.

The actual services to be provided by a MRC hydropower component were described by:

The efficient and socio-economically and environmentally appropriate generation and distribution of hydropower in the riparian countries, in a cooperative and well co-ordinated way, is promoted.

It is clear from these statements that the MRC Hydropower Strategy fully supports hydropower development in the basin that is appropriate, efficient, sustainable and has minimal negative impacts on people in the basin. The concept of mutual benefit is clearly articulated. These objectives were to be provided through three Strategic Areas.

Table 6 summarises these objectives and identifies where progress has been made.

1.4.2 Concept Paper on MRC Hydropower Programme⁴, 2005

The 2005 Concept Paper was prepared in response to the MRC Council's decision at its 11th Meeting in December 2004 to include a hydropower programme in MRC's work programme. It was drafted by a consultant under guidance of a task force and involved consultations with NMCs during August 2005. The Concept Paper was submitted for consideration by the Joint Committee at its Twenty-second Meeting, 30 and 31 August 2005, held in Vientiane, Lao PDR. The Meeting approved the concept paper in principle.

The stated objective of a hydropower programme in the Concept Note (section II) was:

To promote and coordinate the development of hydropower resources in the LMB, with minimum negative impacts on the environment and local people, for mutual benefit of the MRC member countries and for partly meeting the increasing energy demand in the MRC countries, thereby supporting the countries' economic growth and poverty reduction.

Table 7 summarizes the proposed nature and scope of a hydropower programme as proposed in the Concept Note (section 8.4) together with a commentary on what has happened since.

⁴ For historic description use is made of the earlier terminology. This is now being taken forward as the Initiative on Sustainable Hydropower (ISH).

Table 6 : Status of Strategic Areas of MRC Hydropower Strategy, 2001

	Strategic Directions	Experience since 2001
Strategic Area #1: Integrated Water Use, Environmental and Socio-Economic Factors		
1.1	<i>Sector EIA for Hydropower Development: Prepare a Sector EIA for hydropower development in LMB and give assistance to the riparian countries in developing their own EIA systems, considering the planning processes proposed by the World Commission on Dams.</i>	<p>No overall sector or strategic environmental assessment for hydropower in the LMB has been undertaken. In an adjacent basin in Vietnam, a pilot Strategic Environmental Assessment (SEA) has recently been concluded for Vu Gia Thu Bon Basin and for the Energy Master Plan 6 which provides valuable lessons for capacity building in this area.</p> <p>SEA is recommended as a component of this Initiative. Development of a sustainability assessment tool for hydropower is included in the Environmental Considerations for Sustainable Hydropower Development (ECSHD) under the MRC's Environment Programme.</p>
1.2	<i>Cumulative Effects of Reservoirs: Study cumulative effects of reservoirs for seasonal storage and inter-basin diversions for hydropower and irrigation on downstream physical changes in river flow and water quality.</i>	<p>Overall assessment of impacts of mainstream projects (including those upstream) on hydrology of the basin was undertaken in 2004 with World Bank support, (see Modelled Observations on Development Scenarios in the Lower Mekong Basin, 2004). It did not however cover ecological aspects. Two cumulative impact assessments have been prepared for sub-basins by ADB in connection with the Nam Theun 2 and Nam Ngum 3 projects.</p> <p>Initial assessments on flow, sediment and ecological impacts of hydropower development in China and on tributaries in the lower basin were prepared under MRC's Integrated Basin Flow Management (IBFM) Programme. Building on this work, cumulative impact assessment of mainstream and tributary on hydrology, water quality and ecology projects is scheduled under the BDP. As with ECSHD, there is a need to fast track BDP's results in relation to planning cycle for major hydropower projects in the basin.</p>
1.3	<i>Mitigation of Possible Side Effects for Fisheries: Clarify potential negative side effects of hydropower dams on fisheries and the environment and assess possible mitigation measures.</i>	<p>Strategy identifies that the main concern is the 'obstruction of fish migration by dams'</p> <p>Some data and analysis already available in Fisheries Programme and other initiatives, e.g. World Fish Centre. Main issues are identified in an Expert Group working paper being prepared for the work on significance of tributary flows and the mainstream.</p> <p>Proposal for a study to identify important feeding and spawning grounds has been prepared. Results due by first quarter 2009.</p>

Strategic Area #2: Efficient Hydropower Generation and Distribution Mechanism		
2.1	Improving Efficiency in Power sector and Demand Side Management: <i>Study the potential for improved efficiency, reduced power demand and savings in investments in the power sector in the riparian countries through Demand Side Management (DSM) and other options.</i>	<p>Limited national policy initiatives on demand-side management and tariff reform, in connection with World Bank and ADB programmes and policy dialogue, but little impact on the ground.</p> <p>Important issue connecting with both climate change and demand forecasts that drive development of new projects and in relation to reducing carbon emissions. IFIs and other stakeholders are likely to have a more prominent role than MRC.</p>
2.2	Private Sector Participation in hydropower development: <i>Study practices and obstacles for private participation in hydropower development in the riparian countries; develop and propose efficient and fair principles for private participation.</i>	<p>Extensive private sector participation since 2001.</p> <p>In the absence of an SEA (item 1.1) or CIA (item 1.2) for the basin, the question remains whether the regulatory framework and planning systems governing identification of potential hydropower development sites sufficiently recognise environmental and social considerations.</p> <p>A related issue for MRC is providing greater clarity on PNPCA procedures in relation to the private sector project cycle, in particular interpretation of the terms 'timely' and 'implementation'.</p>
Strategic Area #3: Information System and Capacity Building		
3.1	Review and Dissemination of Best Practices: <i>Review and disseminate best practices, for example with respect to least-cost generation expansion planning and public participation.</i>	<p>This is also linked to item 1.1 and the conduct of an SEA to promote social and environmental considerations are given adequate weight along with technical and economic factors in project selection.</p> <p>MRCS was a Forum member of the UNEP-Dams and Development Project (DDP) that developed a compendium of case studies and good practice. There remains a role for MRCS to disseminate good practice among planners and private sector developers.</p>
3.2	Data Collection and Storage: <i>Make a quality assessment of the existing basic data files and the current programmes for data collection and storage of relevance for development planning and consequential socio-economic and environmental impacts.</i>	<p>Some elements of this are included in the data needs assessment being carried out by IKMP.</p> <p>Stronger commitments required with national agencies to share hydro-met and other data with MRC.</p> <p>Limited or no information is made available by private sector developers in relation to their EIAs, feasibility studies (including base data, mapping) and operating data (inflows, reservoir water levels, outflows, rainfall, water quality, sediment data etc.).</p>
3.3	Ranking of Projects in a Regional Context: <i>Review and update existing studies of potential hydropower development projects in LMB and establish a tentative ranking of the projects in a regional context.</i>	<p>Recent ranking studies have generally been undertaken on a national basis, e.g. current JICA supported master plan study in Cambodia (excluding mainstream projects), and the national Hydropower Master Plan and Energy Master Plan 6 in Vietnam.</p> <p>BDP will establish a portfolio of projects including proposed mainstream projects based on its evaluation of development scenarios. Item 1.1 on SEA would also be relevant here.</p>

Table 7 : Main Components Envisaged in the 2005 Concept Note and Current Status

	Component	Status
(i)	<i>Promote and coordinate hydropower development in the LMB in line with the MRC's IWRM and WCD approach with a view to develop hydropower in a sustainable manner to keep balance between the environment and development.</i>	MRC has declared its support for sustainable hydropower development through the 2001 Hydropower Strategy. The BDP will assess hydropower developments against principles of IWRM in its development scenarios. MRCS was a member of the UNEP-DDP Forum which looked into good practices.
(ii)	<i>Data gathering for tributaries and the mainstream and conduct a study on the flow regime changes due to existing hydropower projects. The study should include a baseline analysis before these projects were for comparison with present conditions.</i>	Being undertaken by BDP although baseline will be more contemporary.
(iii)	<i>Identify joint projects with mutual benefit, both hydropower and multipurpose schemes, to take advantage of synergies between hydropower generation and other purposes.</i>	BDP is looking into options for new projects through its sub-area analysis and will assess these together with already planned hydropower projects through its work on development scenarios and assessment of cumulative impacts.
(iv)	<i>Coordination between MRC and upstream states in terms of information exchange would be useful for better planning of hydropower development plan in the LMB.</i>	Some data on upstream dams is already available, but limited, particularly on operational rules. Dialogue is continuing with the aim of strengthening cooperation.
(v)	<i>As planning is a revolving process, updating hydropower databases and projects in the tributaries and on the mainstream would be required.</i>	MRCS has developed a number of databases including the PNPCA database and hydropower database presented at the 27 th JC meeting. Others include information prepared for the scoping stage of ECSHD. These databases have been consolidated into a single database by BDP.
(vi)	<i>Using WUP's DSF to formulate hydropower scenarios and evaluate impacts for short-term and medium-term to provide inputs, together with other sectors, into the BDP. Optimizing operation rules to minimize downstream environmental impacts are also recommended</i>	Preliminary implications prepared under MRC's IBFM Programme. BDP is taking this further (see item iii). The issue of operating rules needs further exploration as there appears to be little flexibility to change these once concession agreements have been negotiated with developers.
(vii)	<i>Select MRC priority projects and conduct necessary investigations</i>	Under BDP. Inputs required from MRC Programmes including FP, EP and NP)
(viii)	<i>Coordinate with the MRC member states to enhance the cooperation, and with donor and lending agencies in programming of hydropower sector to jointly undertake activities and divide tasks in providing technical and funding assistance to MRC member countries</i>	Hydropower development in the region is now effectively private-sector driven and the role of multilateral development banks has changed. There is still a role for additionality in financing for sustainable hydropower. Another area to be considered is financing of smaller scale hydropower projects with strong poverty reduction linkages.
(ix)	<i>Monitoring of water quantity, water quality and impacts, especially on trans-boundary issues, in cooperation with the MRC programmes</i>	Data collection undertaken by IKMP, BDP and EP as part of MRC's overall data collection and modelling programme. ISH could make specific proposals regarding any additional monitoring locations and sampling regimes.

The timeframe for the proposed hydropower programme was 5 years, coinciding with the Strategic Plan period 2006-2010. Implementation arrangements, work programme and funding requirements were not elaborated in the Concept Note, but rather left to a later stage of formulation.

1.4.3 Developments since 2005

Some of the activities described in the Strategy Documents and Concept Note, notably the Joint ADB/MRC/WWF Initiative now termed Environmental Considerations for Sustainable Hydropower Development (ECSHD) in the Mekong Region and the Hydropower Database (HPDB), have already been initiated by the Environment Programme and the Basin Development Plan, respectively.

Funding for initial activities relating to sustainable hydropower development was secured in 2007 and the MRC Joint Committee at its informal meeting on 19 June 2008 took note of a Discussion Brief (which largely forms the basis for the work plan of the Initiative on Sustainable Hydropower laid out in the present document) and stressed the urgency in defining the scope of the MRC's hydropower-related activities and its components.

An initial round of National Consultations with the four Member Countries was held during July and August 2008. A number of recommendations and suggestions regarding the scope of MRC's activities in hydropower development were made, covering:

- **Planning**

- Need to ensure hydropower development in the Mekong Basin in a regionally equitable and sustainable manner, incorporating dialogue with China and considering fisheries and navigation as integral elements;
- Full inclusion of environmental and social aspects in cost-benefit analyses of mainstream and tributary dams, and identification of opportunities for equitable benefit sharing; and
- Promotion of the use of Strategic Environmental Assessments (SEAs) and Cumulative Impact Assessments (CIAs) in sustainable hydropower development.

- **Capacity Building**

- Need for support to line agencies and project developers in implementing uniform monitoring procedures and safeguard frameworks.

- **Information Exchange**

- Importance of information flow between countries and establishment of a database of environmental baseline information for hydropower planning.

The National Consultations also stressed that a key factor in formulating MRC's activities relating to hydropower should be the concept of sustainability. A number of other recommendations were put forward, including i) prioritisation of the socio-environmental aspects of hydropower development, in particular with respect to the proposed mainstream dams, ii) inclusion of analysis of hydropower planning processes in riparian states, and iii) the need for clearly defining the objectives, milestones and outputs to be expected from the activities.

Further details of the recommendations and suggestions made during the first round of National Consultations are given in Annex 3.

The initial National Consultations were followed by a Regional Multi-Stakeholder Consultation meeting held in Vientiane on 25-27 September 2008. The meeting included a wide range of presentations from water, energy, environment and other government agencies, private power developers, international financial institutions, international and national NGOs, MRC development partners and MRC staff. Proceedings of the Regional Consultation are available at <http://www.mrcmekong.org/programmes/Hydropower/stakeholder-consult-ppt.htm>.

On the basis of the Discussion Brief and the results of the Regional Consultation a more detailed description of MRC's proposed hydropower-related activities was formulated. At its 15th meeting held in Vientiane on 6-8 November 2008 the MRC Council discussed the proposed activities and instructed the MRC Joint Committee to undertake further consultation with Member States with regard to the implementation modalities and overall title of the proposed work programme.

A second round of National Consultations with Member Countries was therefore held in November and December 2008. Details of the recommendations and suggestions made during this round of National Consultations are given in Annex 4.

These consultations highlighted the need for a time-bound framework for MRC's hydropower activities, ensuring strong cooperation among relevant MRC Programmes without establishing a new Programme structure. The detailed description of MRC's hydropower activities was restructured accordingly and discussed at a national meeting with the Thai National Mekong Commission and representatives of relevant line agencies held in Bangkok in February. Annex 5 contains details of the comments and suggestions made during this meeting.

The present document reflects the views expressed and comments made during the Regional Multi-Stakeholder Consultation in September 2008, the second round of National Consultations in November/December 2008 and the National Consultation held in Thailand in February 2009.

This document will be the subject of a second Regional Consultation to be held in the first half of March 2009.

2 Rationale of the MRC Initiative on Sustainable Hydropower

2.1 Regional Relevance

The MRC Strategic Plan 2006-2010 defines the mission of the organisation as:

“To promote and co-ordinate sustainable management and development of water and related resources for the countries’ mutual benefit and the people’s well-being””

This is to be fulfilled by implementing strategic programmes and activities and providing scientific information and policy advice.

From the above, the following main points to guide the process of formulating the work plan for the Initiative on Sustainable Hydropower have been identified:

- a multi-sectoral and integrated approach to the management and use of water and related resources;
- regionally sustainable development emphasising environmental as well as multi-sectoral socio-economic considerations;
- promotion of optimal development which implies the notion of economic efficiency, within a broader sustainability framework of equitable development;
- a focus on activities that are basin-wide in nature, or, if located in only one or two of the member countries, activities that contribute substantially to regional knowledge and understanding;
- promotion of co-operation and collaboration among the riparian member countries; and
- generation and dissemination of information and knowledge to the member countries.

In accordance with the mandate given in the 1995 Agreement the MRC Council approved in 1998 five principles outlining the role of the organisation with respect to the development of hydropower. These principles focus on information exchange, close co-operation with relevant international institutions, co-ordination and monitoring of basin-wide activities, and studies and methodology development with respect to cumulative environmental impacts and socioeconomic aspects, as well as mechanisms for public participation and private sector involvement. As laid out in the MRC Hydropower Development Strategy, 2001, these principles permit the role of the MRC in hydropower development to be outlined along several dimensions: clients, functions and spatial dimension:

Clients:

- the primary clients of MRC are the member countries. With respect to hydropower, this refers to the line ministries, utilities and other entities within the countries involved with hydropower development and, more generally, water resources development;
- the various divisions and programmes within MRC are partners with whom an exchange of information and views with respect to hydropower activities will take place, in order to ensure co-operation and coordination;
- private developers of hydropower who may seek information, data and guidance from MRC.

Functions:

- generation and dissemination of information related to hydropower development is seen as a primary function, as well as:
- providing policy advice;
- carrying out sector plans and studies up to the level of pre-investment;
- monitoring hydropower related activities in the Basin and promoting transparency in the hydropower planning and development process.
- strengthening the planning and implementation capability of entities in the member countries through training; and
- serving as a vehicle for promoting co-operation and collaboration among the riparian countries and in the region with respect to hydropower issues.

Spatial dimension:

- activities related to the mainstream and sub-basins of the Mekong river;
- activities with noticeable cumulative impacts;
- activities involving two or more countries with the objective of information exchange and, where needed, mediation; and
- activities involving equitable benefit sharing.

MRC has a certain number of qualities that places it in a position to disseminate ‘best practices’ with respect to hydropower development in the LMB. It is based on a strong legal framework that ensures consultation and evaluation of major development projects. It exhibits the resource management functions necessary for a river basin organisation (RBO) that seeks sustainable solutions, balancing economic development, environmental protection and social welfare. It has an administrative framework that allows it to maintain adequate data bases and to involve the Basin community at appropriate levels.

At the same time, the role of MRC will be defined in relation to national and other international institutions involved in hydropower development in the Basin and, more generally, in power development in the region. The Initiative on Sustainable Hydropower will focus its efforts on those aspects and issues in which the MRC has a comparative advantage, and emphasise co-operation with institutions involved in hydropower and water resources management in the region, in order to avoid duplication of efforts.

2.2 Stakeholders

The following main groups of stakeholders in hydropower development in the Mekong region have been identified:

- Government (at national, provincial, local and basin levels);
- Regional initiatives, such as the Greater Mekong Subregion;
- Project developers (owners, operators [public and private]);
- Communities and other water users (adversely affected [reservoir, upstream, downstream, construction], beneficiaries [electricity and water users], watershed communities)
- Financiers (public / private, domestic / foreign); and
- Other interested parties (Local organizations [Women’s, youth, farmers, etc], NGOs, private sector [consultants, contractors, suppliers], professional associations, industry groups, consumer associations, academia ...).

Generally, public participation in power sector planning has been limited. People's committees and mass organizations at the commune or village, district and provincial levels are generally involved in decision-making during the detailed planning and construction phases of hydropower projects— at least in regard to the resettlement measures, and to a lesser degree environmental mitigation measures. However, local voices have been limited in sector and national planning, where decisions about whether to develop a hydropower project are made in processes structured around inter-agency meetings. Decisions on the project design parameters and project components are largely taken within the domain of the responsible ministries and utilities with limited public discussion.

Stakeholder participation is a central theme of the IWRM approaches adopted by the MRC. The Initiative on Sustainable Hydropower will promote such principles in hydropower planning and decision-making.

3 Design of Work Plan

3.1 Guiding Principles

MRC's 2001 Hydropower Development Strategy and the 2005 Concept Note have provided a framework for preparing the work plan for the Initiative on Sustainable Hydropower (ISH).

Key principles considered in framing the detailed activities for the ISH have included:

- Added value of MRC as a regional river basin organization, facilitating communication and interchange of opinions between Member States and Dialogue Partners.
- Need to be participatory and inclusive of all the stakeholder groups listed in Section 2.2 above.
- Relevance to i) the agencies responsible for setting the policy framework and regulating project developments, and ii) other stakeholders, making available a body of knowledge and analysis to support decision-making for the joint interests of the Member States.
- Consistency with the MRC Strategic Plan 2006-2010.
- Coordination with the various MRC Programmes/Sections.
- Articulation of the benefits of a basin-wide approach focusing on long-term sustainability of hydropower development in accordance with the procedures of the 1995 Mekong Agreement. and
- An overriding principle has been to keep the work plan realistic and manageable.

As noted above in Section 1.4.3, some activities have already been initiated under MRC's Programmes. The requirement for the present work plan formulation has thus been to identify, with the resurgent interest in hydropower and today's rapidly changing development context in mind, what additional activities need to be built into the Initiative on Sustainable Hydropower, what are their associated priorities, and how to implement and fund them.

3.2 Cross-cutting Issues

A number of important criteria relating to mainstream and tributary hydropower developments are being addressed by the BDP through its cumulative assessment of development scenarios. This, however, requires answers to some complex questions of a regional dimension that are beyond the scope of an individual project developer, financing agency or national line agency to answer alone. MRC's involvement through the Initiative on Sustainable Hydropower and other activities is not only a response to existing commitments under MRC's Strategic Plan, but also recognises the unique position that the organisation is in to use its knowledge base, modelling capacity and cross-sectoral analytic capability.

Some aspects such as changes in the flow regime, water quality and morphological changes are already incorporated into the study of cumulative impacts of various development scenarios under BDP2 and these will be supported by ISH. Other aspects require more judgmental

interpretations based on a broad body of analysis and experience built up by MRC's Programmes over the years, including the Environment and Fisheries Programmes. Overall, the range of criteria is similar to that of the Mekong Method developed under MRC's Integrated Basin Flow Management (IBFM) initiative.

Further details of the collaboration, cooperation and coordination with MRC core programmes envisaged in carrying out the work plan for the Initiative on Sustainable Hydropower are given in Section 3.5.

3.3 Overall Goal and Objectives of Initiative

The objectives of MRC's hydropower-related activities as stated in the 2001 Hydropower Strategy, the 2005 Concept Note and the Discussion Brief remain generally valid, needing only to be updated to recognise the rapidly changing context in the hydropower sector and to emphasise the regional role of the MRC in its support for sustainable hydropower development. The following restatement of the overall goal of the present initiative has therefore been set:

To promote and facilitate regional cooperation among member countries and developers for the sustainable development of hydropower resources in the LMB, thereby realising mutual benefits, supporting economic growth, reducing poverty and minimizing negative impacts on the environment and people in the basin.

It may be noted that the concept of sustainable hydropower development prevails throughout the present document. It is a key element of the 1995 Agreement and the five principles agreed by the MRC Council in 1998 (see Section 1.3) and it features prominently in:

- the strategic areas identified in the 2001 Hydropower Strategy (see Section 1.4.1 above);
- the main components envisaged in the 2005 Concept Note (Section 1.4.2); and
- the definition of MRC's mission presented in the Strategic Plan 2006-2010 (Section 2.1).

In addition, during the National Consultations held in July/August 2008 it was recommended that sustainability should be a key factor in formulation of MRC's hydropower-related activities (see Section 1.4.3 above). It was in recognition of the importance of sustainability that the title of the present initiative has been selected.

Four immediate objectives are proposed to reflect the manner in which ISH will meet the above overall goal:

- Increased communication and cooperation between Member States, Dialogue Partners, project developers and financiers, and other stakeholders involved in hydropower development in the Basin.
- An expanded knowledge base (data and information) on existing, under construction, planned and proposed hydropower projects in the Mekong Basin as well as improved baseline environmental information for hydropower planning made available and capacity built in MRCS, the NMCs and line agencies for regional other organisations for implementation of relevant environmental and social policy, undertaking of hydropower strategic environmental assessments (SEAs) and Cumulative Impact Assessments (CIAs), and monitoring of hydropower project development.

- Technical support provided to line agencies of Member States, project developers, financiers and other stakeholders and decision-makers on key issues in regional hydropower planning.
- Measures to achieve increased sustainability of hydropower projects identified and assessed, and support provided to line agencies and project developers in formulating appropriate financing mechanisms and implementing the measures.

3.4 Structure of Work Plan

3.4.1 Components

The outputs of the Initiative on Sustainable Hydropower which are required to achieve the above overall goal have been structured around a set of thematic components.

In accordance with the recommendation expressed at the 13th meeting of the MRC Council in December 2006, an overarching component “Management and Communication” is foreseen. Inclusion of this component is intended to ensure that the Initiative on Sustainable Hydropower remains relevant and acceptable to the various stakeholders involved in the hydropower development process in the Basin and fulfils the first of the immediate objectives listed in Section 3.3 above.

Three further components, “Capacity Building and Knowledge Base Support”, “Regional Planning Support” and “Hydropower Sustainability Assessment and Financing” correspond to the other three immediate objectives listed above and broadly reflect the role of MRC in hydropower development as outlined in Section 2.1.

The four components of MRC’s Initiative on Sustainable Hydropower are:

- **Component 1 : Management and Communications**

Activities under this component will include setting up and managing the Initiative on Sustainable Hydropower and will also focus on facilitating dialogue and communication between Member States, Dialogue Partners, private sector and other stakeholders, as well as coordinating thematic inputs in the PNPCA process.

- **Component 2 : Capacity Building and Knowledge Base Support**

This component will concentrate on expanding MRC’s technical, environmental, social and economic database and improving socio-environmental baseline data relating to hydropower development in the Basin, as well as building capacity in MRCS, NMCs and line agencies for implementing hydropower development policies; assessing economic, social and environmental impacts of hydropower development on a regional and sector basis; and monitoring hydropower project development.

- **Component 3 : Regional Planning Support**

Activities under this component will involve provision of support to government agencies and project developers on hydropower-related planning issues on which MRC has acquired and developed region-wide knowledge, expertise and experience through its various work programmes.

- **Component 4 : Sustainability Assessment and Financing**

This component will focus on assisting line agencies and project developers in devising financing mechanisms and implementing good practices designed to enhance the sustainability of hydropower projects developed in the Mekong Basin.

Component 1 will support the other three components.

The proposed activities within each Component have been grouped under specific Outputs serving to achieve the four immediate objectives indicated above. Inevitably, some of the activity groups and outputs touch upon more than one of the underlying themes. In general, however, the central focus of each activity group is evident and the pertinent Component clearly identified.

3.4.2 Outputs

As indicated above, the proposed activities of the ISH within each of the above-described Components have been grouped under specific Outputs (reflecting the recently initiated move by MRC towards a more output-oriented monitoring and evaluation of its activities).

The ISH comprises a broad range of inter-disciplinary outputs and activities, many of which are either already underway or planned by MRC Programmes. The Components of the Initiative are therefore divided into two groups – those under the direct responsibility of existing MRC Programmes and those implemented by the ISH Coordinating Team.

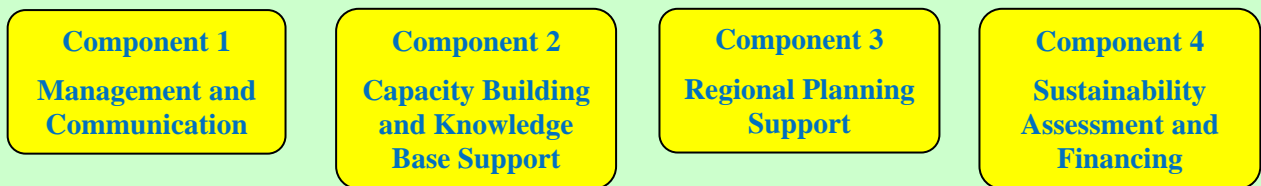
In the schematic diagram showing the four Components and planned Outputs in Figure 1 a distinction has therefore been drawn between those Outputs which will be under the direct responsibility of the Initiative Coordination Team and those to be under the responsibility of existing MRC Programmes/Sections.

3.5 Outline of Components, Outputs and Activities of the Initiative

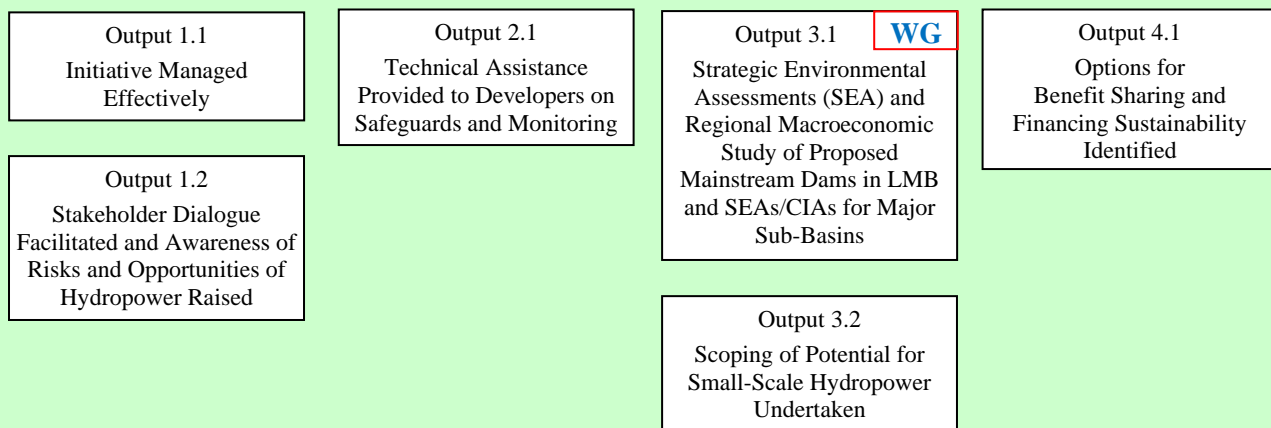
MRC's 2001 Hydropower Strategy, the 2005 Concept Note and the 2008 Discussion Brief remain as general guide at a level of principles. However, a more detailed implementation strategy is required to describe how MRC will engage in the ongoing planning and development of hydropower resources in a meaningful way, based on its unique role as a regional river basin organisation. Such an updated implementation strategy is presented in this document and reflected in Figure 1.

The sections below present outlines of the activities to be undertaken to produce the targeted Outputs. It should be noted that, as described in Section 4 below, work has already started in 2008 on a number of the Outputs, using the funding for hydropower-related activities secured in 2007.

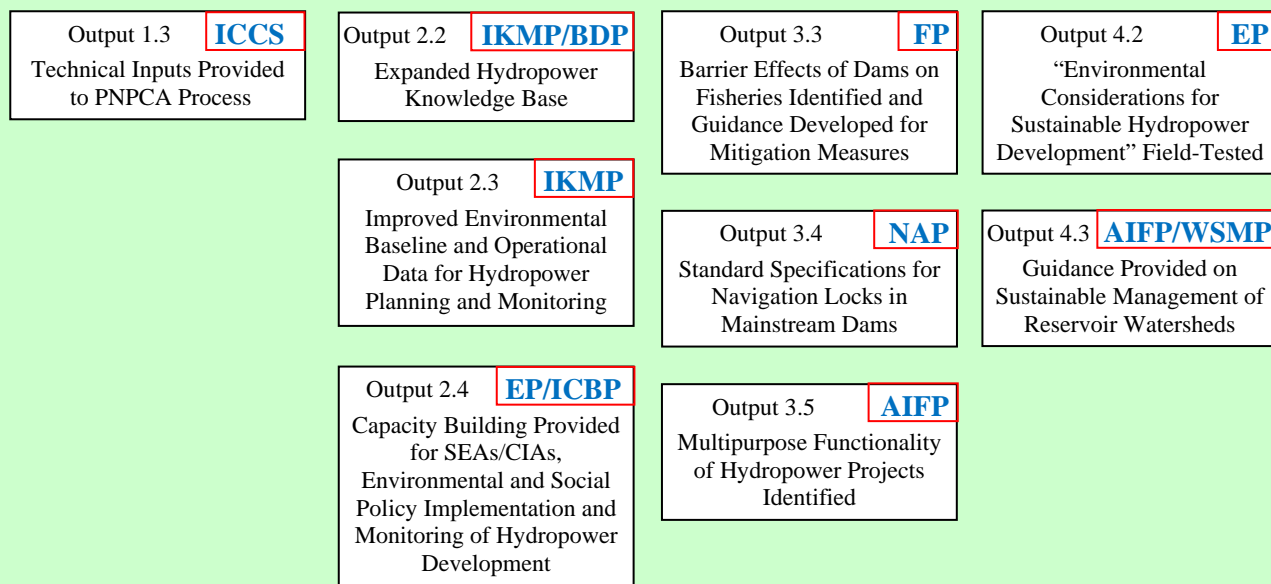
It is to be understood that, before commencing new activities associated with each Output, a more detailed specification of the proposed activities and envisaged outcomes will be prepared for discussion.



Outputs under direct responsibility of ISH Coordination Team^{1/}



Outputs under direct responsibility of existing MRC Programmes/Sections^{2/}



AIFP : Agriculture, Irrigation and Forestry Programme
 BDP : Basin Development Programme
 EP : Environment Programme
 FP : Fisheries Programme
 ICBP : Integrated Capacity Building Programme

ICCS : International Cooperation and Communication Section
 IKMP : Information and Knowledge Management Programme
 NAP : Navigation Programme
 WG : Multidisciplinary Working Group under MRCS OCEO
 WSMP : Watershed Management Programme (GTZ – MRC AIFP)

1/ To be funded by ISH.

2/ Funding for activities under these Outputs will comprise a mix of resources from existing Programmes and new funding sourced through ISH.

It should also be noted that it is expected that with each Output there will be some form of active management and/or coordination input from:

- i) both the ISH Team Leader and the International Hydropower Policy and Strategy Consultant, and;
- ii) the designated ISH Coordinators in the NMCs of each of the four Member States.

(See Section 4 on Implementation Arrangements)

To avoid repetition, these inputs have not been specifically mentioned in the descriptions of each Output. Furthermore, in the budget estimate presented in Annex 6 the full-time costs of the above persons are included in the budget for Output 1.1 (Management and Communication).

Where some input over and above the normal coordinating role of the ISH Coordinators is required from the NMCs this is specifically mentioned in the description of the corresponding Output.

3.5.1 Component 1 : Management and Communication

Output 1.1 : Initiative Managed Effectively – Under ISH

Rationale

The 2001 Hydropower Strategy and the 2005 Concept Paper were a comprehensive attempt to interpret emerging international good practice in hydropower development and lay out what is meant for the Mekong region, identifying strategic work areas and possible components of an MRC hydropower initiative. On 19 June 2008 the MRC Joint Committee took note of a Discussion Brief which reviewed developments in the hydropower sector since 2005 and proposed a series of activities to be undertaken by MRCS.

An initial round of National Consultations and subsequent Regional Multi-stakeholder Consultation served to achieve an improved understanding of the Mekong hydropower development context and its key issues, and to seek recommendations on the further formulation process of proposed MRC hydropower-related activities. The present Draft Work Plan for the Initiative on Sustainable Hydropower has been based on the results of the Regional Consultation and a subsequent second round of National Consultations.

To achieve the overall goal and specific objectives and outputs of the Initiative on Sustainable Hydropower an efficient management system will need to be established and implemented. The management processes and procedures to be set in place will need to cover all activities and give particular attention to interaction with existing MRC programmes.

Principal Activities

Preparation of the current Work Plan for the Initiative on Sustainable Hydropower has involved:

- National consultations on the Discussion Brief with all four riparian states.
- Preparation of preliminary proposals for MRC hydropower-related activities, based on the Discussion Brief and the outcomes of initial National Consultations.

- Organisation and holding of a Regional Multi-stakeholder Consultation on MRC's proposed hydropower-related activities.
- Elaboration of a more detailed description of the proposed hydropower-related activities on the basis of the outcome of the Regional Multi-stakeholder Consultation.
- A second round of national consultations and subsequent preparation of a Work Plan for MRC's Initiative on Sustainable Hydropower.

The proposed Work Plan as presented in the current document will be the subject of a second Regional Consultation to be held in the first week of March 2009.

Effective management of the Initiative will require:

- Drafting of an implementation plan for the Initiative.
- Elaboration of implementation arrangements.
- Elaboration of management procedures: work planning, communication and coordination, financial management, monitoring, reviews and reporting.
- Allocation of activities at MRCS and national levels.
- Elaboration of detailed work programmes for individual Outputs under each Component.
- Establishing of a monitoring and evaluation process.
- Preparation of budgets and administration of funds.
- Preparation of annual progress reports and summary reports for JC and Council meetings.
- Identification of personnel requirements and preparation terms of reference for Coordination Team members and international and regional/national experts.
- Preparation of management monitoring and review reports.
- Overall supervision of the work of the Initiative on Sustainable Hydropower.
- Preparation of recommendations for adjustment and refinement of the implementation plan for the Initiative.

Time Frame and Milestones

The process of preparing the present Work Plan involved:

- Initial National Consultations: held in Phnom Penh, Bangkok, Hanoi and Vientiane during July/August 2008.
- Regional Multi-stakeholder Consultation: held on 25-27 September 2008.
- Production of detailed description of proposed MRC hydropower-related activities: November 2008.
- Second round of National Consultations: November/December 2008.
- Elaboration and dissemination of a Work Plan for the Initiative on Sustainable Hydropower: February 2008.
- Second Regional Consultation on the proposed Initiative on Sustainable Hydropower Work Plan : March 2009.

Management of the Initiative will involve:

- Establishment of management and administrative procedures: 2 months.
- Continuous management thereafter.

Coordination with MRC Programmes

- Circulation of the Discussion Brief among relevant MRC Programmes/Sections (BDP, EP, AIFP, FP, IKMP, TCU and ICCS) for comment during June/July 2008 prior to first round of National Consultations.
- Presentations by BDP, FP and EP at Regional Multi-Stakeholder Consultation.
- Circulation of a draft Work Plan among the MRC Programmes for comment during November/December 2008 and the revised Work Plan for further comment during February/March 2009.
- Presentations by FP, NAP and EP at second Regional Multi-Stakeholder Consultation describing work already carried out.
- Coordination will be required with BDP, EP, FMMP, FP, IKMP, AIFP, TCU and ICCS during implementation of the Initiative.

Inputs

Preparation of the present Draft Work Plan has involved:

- Hydropower Project Manager full-time for 8 months.
- External international consultation facilitator (1 month, funded by USAID),
- External international hydropower consultant (6 months).
- Consultation visits to Member States for National Consultations.
- Two Regional Consultations.

Management of the Initiative will, in addition to inputs from OCEO and Division Directors, require:

- Initiative Team Leader, full-time (36 person-months).
- International hydropower policy and strategy expert, full-time (36 person-months).
- Secretary, full-time (36 months)

In addition, the elaboration and implementation of the Initiative on Sustainable Hydropower Work Plan will require:

- ISH Coordinators in all four NMCs, full-time (42 months each)

Output 1.2 : Stakeholder Dialogue Facilitated and Awareness of Risks and Opportunities of Hydropower Development Raised – Under ISH

Rationale

With the 1995 Mekong Agreement the governments of the Member States agreed to “cooperate and coordinate in the development of the full potential of sustainable benefits to all riparian

States". With this objective in mind the Initiative on Sustainable Hydropower will act as a facilitator of dialogue at different levels on key issues facing the hydropower sector.

The need for such wide-ranging dialogue was agreed by all national groups at the Regional Multi-Stakeholder Consultation held in 25-27 September 2008 and MRCS was encouraged to use its regional focus and accumulated knowledge in facilitating dialogue among all stakeholders and mobilising expert opinion to initiate discussion on relevant topics.

Furthermore, the ongoing and planned further rapid development of hydropower in the Basin, both on the upstream Lancang River and on the mainstream Mekong and tributaries in the LMB, if appropriately implemented, could bring with it a range of opportunities for promoting economic growth, ensuring protection of the environment, improving living standards in the Basin and reducing through poverty.

On the other hand, without implementation of suitable measures to mitigate undesirable impacts or adoption of appropriate strategies to adapt to the likely flow changes in the Mekong flow regime due to hydropower development over the coming years, there will be a significant risk of foregoing these benefits, with environmental degradation, disruption of the livelihoods of affected persons, wasteful use of the Basin's resources and implementation of unsustainable projects.

There is therefore a need to assist the responsible line agencies of the Member states not only to maintain close communications between each other but also to disseminate information on the risks and opportunities of hydropower development to civil society across the Basin and involve them more in planning processes. Line agencies and local authorities need to be helped to build in-house capacity in raising awareness among riverine communities of the likely changes, on addressing views expressed and where necessary developing strategies for adaptation.

It is to be expected, too, that MRC will be increasingly called upon, by the public in general as well as private organisations, to provide well-founded information and clearly understandable explanations of the many issues which can be expected to arise from basin-wide hydropower development.

There is also a need, therefore, for MRC to continue to increase the effectiveness of its communications strategy, making more widely known the outputs produced by the Initiative on Sustainable Hydropower and fostering general recognition of MRC as a source of sound and impartial information, opinion and advice.

Principal Activities

There are clear opportunities for the Initiative in:

- Providing *ministerial briefings*, as requested, on hydropower-related aspects of regional energy planning, environment, water resources, etc., based on MRC's knowledge base and experience, and cooperating with ICCS and various MRC programmes (e.g. BDP, EP, FMMP, FP, NAP and IKMP) in facilitating dialogue with line agencies below ministerial level on cross-sectoral issues within each of the four countries;
- Facilitating dialogue among *private sector developers and financiers* on raising awareness of MRC's activities, on optimizing project performance within a basin context and ensuring coordination for environmental mitigation measures, particularly relating to fisheries and

water quality. Such dialogue will be carried out through the NMCs and under the auspices of the responsible line agencies in each country.

For example, in August 2008, the Department of Energy (DoE), Ministry of Energy and Mines, Lao PDR, approached the LNMC and MRC in connection with studies of proposed mainstream Mekong hydropower projects in the northern part of the LMB. DoE requested advice and support to the DoE and its international consultant for the studies with respect to ensuring that the provisions of the 1995 Mekong Agreement are met and that non-power aspects such as navigation facilities and fisheries are fully considered so that the projects are optimised within an integrated basin context.

MRC also organised a Developers Workshop, hosted by the DoE, held on December 8 December 2008, in which MRC's roles and responsibilities under the 1995 Mekong Agreement were presented together with outlines of MRC's capabilities in the various areas relevant to hydropower development. The DoE, the developers of the proposed projects and MRC also had opportunity for exchange of information on the proposed projects. A similar meeting will be held shortly in Cambodia.

- Continuing dialogue with *Myanmar and China*, and particularly the latter in its various roles as an upstream riparian with significant capability to regulate river flows through existing and planned hydropower projects, as an active member of the Greater Mekong Subregion initiative, as a partner with major companies and banks investing in hydropower development in the LMB, and as a potential importer of hydroelectricity.
- Establishing a *representative process with civil society* permitting community views and opinions on hydropower development in the Basin to be expressed and discussed.
- Facilitating a *Multi-Stakeholder Sustainable Hydropower Forum* for structured debate on key issues facing hydropower development in the Basin and feed-back into the design and implementation of the Initiative on Sustainable Hydropower

The Initiative will also assist the relevant line agencies in raising awareness of the risks and opportunities of hydropower development in the Basin by:

- Collaborating with line agencies in assessment of the current awareness of the general population (in particular riverine communities) with regard to key Mekong issues and evaluation of the capabilities of these agencies and of provincial and local authorities to disseminate information on likely changes in the Mekong flow regime brought about by hydropower development in the Upper and Lower Basin and to make river communities aware of appropriate adaptation measures.
- Providing media training to the NMCs and line agencies on the design and implementation of communication programmes.
- Monitoring institutional uptake and adapt awareness communications as circumstances develop.

In parallel the Initiative will strengthen MRC's own communication and information dissemination programme by:

- Preparing and publishing publicity materials and articles (on MRC website, in "Mekong News", in national and local newspapers, etc.) identifying the opportunities and risks associated with hydropower development in the Basin and discussing the measures which can

be undertaken to exploit the opportunities and minimise the risks. Key material will be translated into languages of the four member countries.

- Publicising the results of activities of the Initiative, e.g. the Strategic Environmental Assessment (SEA) of the proposed mainstream hydropower projects and the sub-basin hydropower SEAs and Cumulative Impact Assessments prepared as input to the BDP (Output 3.1) as well as other principal Outputs.
- Responding to key public relations events and media coverage regarding hydropower development in the Basin.

Time Frame and Milestones

- Continuous throughout the period 2009-2011.
- Communication programmes of line agencies established: 6 months.
- Ad hoc follow-up activities thereafter.

Coordination with MRC Programmes

These activities will require close collaboration with ICCS and TCU in order to ensure coordination with related activities carried out by BDP, EP, FMMP, FP, NAP, AIFP and IKMP, in particular on cross-sectoral issues. Close collaboration with the NMCs and relevant line agencies of all four Member States will also be required.

Inputs

- One riparian ISH Coordination Team member (Environmental) (part-time, about 55%).
- One riparian ISH Coordination Team member (Technical) (part-time, about 55%).
- Ad hoc inputs from MRC Programmes as required.
- External specialist/company in design and implementation of communication programmes (4 person-months).
- NMC specialists with some experience in communication programmes (one from each country, about 1 week).
- Line agency staff with responsibility for communications (one each from electricity/energy and environment agencies in each country, about two weeks).
- Consultation visits to NMC's and line agencies as required.
- Organisation of meetings/forums/workshops (such as the above-mentioned Developers Workshop held on 8 December 2008, possibly requiring external expert in facilitation of stakeholder participation).
- Four initial journalist workshops, one in each Member State, to identify issues to be addressed by the line agencies and formulation of the appropriate communications programmes.
- Translation services.

Output 1.3 : Technical Inputs Provided to PNPCHA Process – Under ICCS

Rationale

With the increasing pace of hydropower development in the Basin, a considerable increase in the number of Notifications and Prior Consultations relating to hydropower projects submitted by Member States under the PNPCHA process is expected and that also the associated issues to be assessed and presented in reports to the Joint Council will assume greater complexity.

Significant technical expertise and coordination efforts will be required to ensure that the PNPCHA process is fully carried out in a timely manner, with the necessary competence and with the appropriate scope and detail⁵.

Principal Activities

The following technical activities will be required under ISH in support of the procedural role of PNPCHA:

- In collaboration with relevant MRC programmes, in particular BDP, EP, FP, NAP and FMMP, scrutiny of all formal Notifications and Prior Consultations relating to hydropower projects submitted under the PNPCHA process in order to ascertain whether appropriate information on the projects has been included with the submission and a preliminary review of the submission.
- When requested by MRC Joint Committee, to undertake a more detailed review of a project (it is expected that this will be the case with all proposed mainstream hydropower projects), assemble available relevant information on the project, in particular the feasibility study and the environmental and social impact assessments.
- Identify the issues to be reviewed and draw up a work plan for the review, indicating inputs required from ISH, MRC Programmes, NMCs and external advisors/consultants.
- Where required, undertake a visit to the project area.
- Coordinate the preparation of contributions to the review from ISH, MRC Programmes, NMCs and external advisors/consultants and assemble a review report for submission through ICCS to the Joint Committee.
- Coordinate responses to any further requests from the Joint Committee for clarifications or further information.
- Contribute to any work undertaken to refine and/or revise the current PNPCHA.

Time Frame and Milestones

- As required by Joint Committee. The first notification and prior consultation for a proposed mainstream dam in the LMB may occur in the first six months of 2009.

⁵ See Radosevich, G., “Experiences from the Procedures for Prior Notification and Agreement (PNPCA)”, Presentation at Regional Multi-Stakeholder Consultation on MRC Hydropower Programme, Vientiane, Lao PDR, 25-27 September 2008 (<http://www.mrcmekong.org/download/programmes/hydropower/presentations/MRC%20HP%20Consult%20VTE%20908%20gr2.pdf>).

Coordination with MRC Programmes

Coordination will be required between ISH and ICCS, TCU, BDP, IKMP, EP, FP, NAP, AIFP, FMMP and other Programmes, ad hoc as required.

Inputs

- One riparian ISH Coordination Team member (Technical) and one ISH Coordination Team member (Environmental) to supplement in-house expertise from existing MRC Programmes totalling about 6 person-months each over period 2009-2011.
- MRC Programmes (ICCS, TCU, IKMP, BDP, EP, FP, NAP, AIFP, FMMP), in total about 40 person-months over period 2009-2011.
- NMC specialists, about 20 person-months in total over period 2009-2011.
- International and riparian short-term consultants, about 30 person-months over period 2009-2011.

3.5.2 Component 2 : Capacity Building and Knowledge Base Support

Output 2.1 : Technical Assistance Provided to Hydropower Developers on Safeguards and Monitoring – Under ISH

Rationale

The developers of hydropower projects currently under construction or in advanced stages of planning should be designing and implementing a wide range of environmental and social safeguard measures, e.g. Environmental Impact Assessments, stakeholder consultation plans, resettlement and livelihood restoration programmes, construction site Environmental Management Plans, etc. Similarly, together with the developers of the existing hydropower projects, they should be planning and implementing a range of ongoing safeguard measures during the operational period, e.g. catchment management plans, environmental and social monitoring programmes (health, water quality, wildlife management), environmental flows and operating plans, continuous stakeholder consultations, etc.

In some river basins with multiple projects, these plans and programmes could possibly best be managed jointly by the developers involved. In some cases, the Sekong/Sesan/Srepok basin, several countries are involved and the plans and programmes may need to comply with various national laws and regulations.

Where developers do not have the managerial or technical expertise required, consultants and other external organisations will be commissioned to prepare - and possibly implement - these plans and programmes. MRC, with its regional knowledge and experience in capacity building in both government agencies and private organisations, can provide technical guidance to such developers - or groups of developers - in implementing comprehensive safeguard frameworks, assisting in elaboration of the various plans and programmes, commissioning and briefing consultants, developing and carrying out training programmes, etc., so as achieve a degree of uniformity in monitoring programmes and to improve the overall sustainability of the projects.

Principal Activities

- Together with the relevant line agencies (environment and power sectors) in Member States, identify those developers which could possibly require or benefit from MRC technical guidance in preparing and implementing comprehensive environmental and social management frameworks.
- Together with line agencies, conduct one or two short workshops (e.g. in Vientiane and Phnom Penh) for the identified developers, outlining the forms of technical guidance MRC could provide with regard to the planning and implementation of safeguard frameworks, emphasising the advantages of collaboration between developers and harmonisation of monitoring programmes, etc.
- Carry out discussions with the responsible line agencies and developers – or developer groups – to identify technical assistance requirements.
- Under the auspices of the line agencies provide technical guidance to developers.

Time Frame and Milestones

- Identification of technical assistance to be provided to developers: 3 months.
- Provision of technical assistance: periodic as required.

Coordination with MRC Programmes

Collaboration with EP and AIFP (WSMP) will be required.

Inputs

- One riparian ISH Coordination Team member full-time for 3 months.
- Travel to Member States.
- MRC personnel and external consultants/advisors - dependent on agreed scope of technical assistance.

Output 2.2 : Expanded MRC Hydropower Knowledge Base – Under IKMP/BDP***Rationale***

Formulation and implementation of MRC's IWRM-based Basin Development Plan as well as assessment of proposed hydropower development strategies for the Basin require a comprehensive data and information base on existing and planned hydropower schemes in the basin. Work on assembly of such a hydropower database was initiated under BDP in the first half of 2008, with data obtained from relevant line agencies and NMCs.

However, additional data is needed beyond what is required for BDP purposes (e.g. in regard to reservoir operating policies, socio-environmental impacts, etc.). While some consistency checks have been carried out on the data provided, there is a need to add data for the additional parameters, carry out further verification work, improve the accessibility to the database and ensure that it is fully consistent with IKMP standard requirements. With the rapidly changing pace of the hydropower development in the region, the database needs to be continuously updated.

Further, the proposed Outputs of the Initiative on Sustainable Hydropower under both Component 3 (Regional Planning Support) and Component 4 (Sustainability Assessment and Financing) will require information on the legal and institutional frameworks within which hydropower development is taking place in the Member states. Relevant documentation on these frameworks needs to be compiled and maintained up-to-date.

In August 2008 the Department of Energy (DoE), Ministry of Energy and Mines, Lao PDR, sought MRC assistance with regard to the provision of hydrological data for use in studies of five proposed run-of-river hydropower projects on the mainstream Mekong River in the northern part of the LMB. Activities such as this will also help expand MRC's hydropower knowledge base.

Principal Activities

- Review of the current scope of the hydropower project database and identification of further data requirements, e.g. in regard to GIS-representation, reservoir operating policies, costs, socio-environmental impacts, mitigation measures, etc.
- Identification of additional data requirements, e.g. in relation to the power systems into which the existing and planned hydropower projects will feed (transmission networks, historic and forecast demands, etc., available from the relevant line agencies and through the GMS Energy Sector work). This will include data on projects in the Upper Mekong Basin.
- Acquisition of the required additional data from the relevant line agencies. Priority: existing projects, then projects under construction, planned projects (with MOUs, PDAs or featuring in power development plans) and other planned/proposed projects.
- Further checks on the accuracy and consistency of all the data provided, e.g. by comparison of provided flow data with data held by BDP/IKMP or by review of relevant technical reports, and verification/correction. Priority as above for acquisition of additional data.
- Compilation of documentation on government policies, laws, regulations, technical standards and other information relating to hydropower project planning and implementation, including associated socio-environmental measures.
- Compilation of environmental, socio-economic and related reports (e.g. EIAs) and surveys (in electronic form). Priorities: i) recently produced documentation, and ii) projects under construction or in the immediate pre-implementation phase.
- Compilation of non-commercially sensitive sections of memoranda of understanding, concession agreements, project developments agreements, power purchase agreements, licenses, certifications and other such documents, in particular those parts dealing with measures to mitigate social and environmental impacts.
- Assembly of information on organisations (developers, financiers, consultants, etc.) involved in projects under construction or in the process of implementation and/or under study.
- Arrangements for continuous provision of updated data by line agencies and acquisition of new relevant documentation as it becomes available.
- Preparation of periodic reports documenting the contents of the knowledge base and/or significant changes to the contents.
- Derive a set of flow series for the sites of the five proposed mainstream dams reflecting the contemporary regime of the Mekong mainstream and a second data set which would take into

account the potential range of impacts on the flow regime resulting from the upstream hydropower cascade in Yunnan and provide to the Lao Department of Electricity together with the additional rainfall and evaporation data required for the hydropower studies.

Time Frame and Milestones

- Provision of hydrology data for mainstream Mekong locations: completed January 2009.
- Expansion of hydropower knowledge base: 6 months.
- Maintenance of knowledge base: continuous thereafter.

Coordination with MRC Programmes

The precise contents of the expanded knowledge base will require consultation with IKMP, BDP, EP, FMMP, TCU and ICCS so as to avoid duplication and coordinate data and information collection activities.

Arrangements for the storage, verification (quality auditing) and updating of data (and possibly documentary information) will require close coordination with IKMP and BDP.

Inputs

- One short-term international consultant (hydrology), 0.5 person-months, for work on hydrology data for mainstream Mekong locations.
- One riparian ISH Coordination Team member full-time for 5 months, part-time (25%) thereafter.
- One IKMP project officer for a total of about 1 person-month.
- Consultation visits to NMCs and line agencies during the initial 6-month period, with possible occasional visits thereafter.

Output 2.3 : Improved Environmental Baseline Information and Operational Data for Hydropower Planning and Monitoring – Under IKMP

Rationale

Hydropower development planning, including the formulation of appropriate impact mitigation measures, must be based on reliable knowledge of the existing situation with regard to the key environmental factors which will influence the sustainability of any project. Furthermore, given the long lead times in project implementation, knowledge of past trends and forecasts of likely future changes are also required.

In addition, continued monitoring of changes in aquatic environmental conditions at sub-basin and basin level can be used to feed back into project operations. Similarly, changes in land use and other socio-economic practices (e.g. agriculture and mining) that might affect the sustainability of projects need to be recorded, so that the performance and efficiency of management measures to address possible negative impacts can be monitored.

With the rapid pace of development of hydropower in the Basin, there is a need to ensure that MRC environmental baseline information covers all that is required to adequately assess and monitor the environmental impacts of existing and planned hydropower projects.

One particularly important area requiring improvement in baseline information is the current location of spawning grounds of fish which migrate along the Mekong mainstream in the LMB. To gain an understanding of potential impact of the recently proposed mainstream hydropower schemes on fisheries resources and the lives of people who depend on them, it is necessary to be able to gauge the relative importance of the various spawning grounds along the river.

The only way to do this is to conduct a survey of ichthyoplankton (fish eggs, larvae and small juveniles that drift with the current) at selected sites along the length of the Mekong in the Lao PDR. The relative abundance of ichthyoplankton at the different sites would provide a measure of the importance of different stretches of the river for fisheries production.

The fish larvae survey has already been contracted out, equipment has been purchased, sampling sites have been identified and trial sampling conducted. The results of the survey will find direct use in both the envisaged SEA activities (Output 3.1) and the provision of guidance on fisheries impact mitigation measures by the Expert Group (Output 3.3).

Hydropower development in the Basin is increasingly being driven by private or private-public developers. The data obtained from hydrometeorological stations and networks set up by these companies, in particular that relating to dry and wet-season flows, sediment transport and water quality, could be used in regional analyses which could lead to improved designs and enhanced sustainability prospects of projects.

Similarly, regular sharing of operational data (reservoir levels, turbinised discharges, downstream bypass flows, spill discharges, water quality, etc.) with downstream communities as well as the operators of other projects in the Basin or sub-basin can lead to increased energy production through more efficient use of available flows and storage, greater control of downstream flooding and improved management of environmental flows.

In the case of those hydropower projects where peaking operation with rapid changes in powerhouse releases is foreseen, it would evidently be beneficial if a standardised warning system for the downstream riparian populations could be used throughout the Basin. This would also be the case for spillway releases from reservoirs during floods.

MRC, in its role as facilitator of dialogue (see Output 1.1), can help build links with project developers to promote the sharing of hydrometeorological and reservoir monitoring data, in particular for projects having trans-boundary downstream impacts.

Principal Activities

With the respect to the overall environmental baseline information:

- Development of a detailed profile of the environmental baseline data that should be available for individual hydropower projects (or groups of projects) in the Basin, covering upstream and downstream water quantity and quality (including sediment) and drainage basin conditions (soils and land use).

- Review of data and information already held in the project databases established by other MRC programmes (IKMP, BDP, EP, FP, AIFP/WSMP, etc. as well as the hydropower project knowledge base under Output 2.1 above) together with the latest hydropower development plans of the Member States in order to identify the additional baseline information to be obtained and the possible need for installation of new monitoring stations or updating of land use information.
- Together with the relevant line agencies in the riparian countries identify the locations of new monitoring stations and the parameters to be monitored at each station. (The source(s) of funding for these new stations will also have to be identified).
- Arrangement for installation of the new stations and incorporation of the acquired new data into the MRC project database.
- Arrangement with the line agencies in the riparian countries that any updated land use information (in GIS format) for the hydropower project basins is made available to MRC.
- Preparation of periodic reports documenting the contents of the environmental baseline information and/or significant changes to the contents.

Specifically with regard to the identification of fish spawning ground the principal activities would be:

- Sampling at a minimum of 6 sites along the mainstream Mekong every second month for one full year.
- Analyses of ichthyoplankton samples in laboratory facilities.
- Extensive communication of the outcomes and implications of the results of the survey to governments, regional planning agencies and developers.

Securing access to operational data of project developers will require:

- Identification of hydropower projects for which hydrometeorological data have been and/or are still being collected.
- Review of current arrangements with line agencies and MRCS for sharing of operational data from existing projects as well as in those sub-basins where multiple projects are under construction or planned (e.g. Nam Ngum, Nam Theun, Sekong/Sesan/Srepok).
- Together with FMMP, assessment of data requirements for flood forecasting.
- Elaboration of recommendations for sharing of hydro-met related data from existing projects and those under development (e.g. through corresponding requirement in the Concession Agreement or Project Development Agreement).
- Development of a standard procedure for data-sharing to be incorporated into Concession Agreements.
- Promotion of dialogue between developers, line agencies and other stakeholders on the sharing of hydrometeorological and operational data, either within river basin organisations or forums of hydropower developers currently being considered.
- Provision of assistance to relevant line agencies and development partners to build links between developers.
- Coordination of inclusion of selected data in the MRC Hydrological Yearbook.

Time Frame and Milestones

- Identification of locations of new monitoring stations : 3 months
- Maintenance of environmental baseline information base: continuous thereafter.
- Fish larvae survey planning, purchasing of equipment, site identification and trial sampling conducted, July – December 2008.
- Field sampling program – 11 sites across 4 countries sampled 6 times per year; sample analysis initiated, January-December 2009.
- Analyses of ichthyoplankton data completed and report on fish spawning grounds finalised, January 2010-August 2010.
- Review of current situation with regard to access to operational data of power developers: 3 months.
- Facilitation of dialogue on sharing of operational data: 4 months and as required thereafter.

Coordination with MRC Programmes

Coordination will be required with IKMP (current and planned arrangements for collection and dissemination of data), BDP (incorporation of collected information in project database), EP (performance monitoring of projects), FP (ichthyoplankton survey) and FMMP (flood warning systems).

Inputs

- One EP officer full-time for about 4 months, part-time (0.75 person-months) thereafter.
- Consultation visits to NMCs and line agencies.
- Fish larvae survey (sub-contract):
 - International fisheries expert 0.25 person-month
 - Riparian fisheries expert 3 person-months
 - Larvae sampling programme
 - Questionnaire surveys
 - 2 regional technical meetings and 2 regional workshops

Output 2.4 : Capacity Building Provided to Line Agencies for Implementation of SEAs⁶/CIAs, Environmental and Social Policy Implementation and Monitoring of Hydropower Project Development – under EP/ICBP***Rationale***

Institutional arrangements and capacities for the planning and monitoring of hydropower development vary significantly among the MRC Member States. In Lao PDR, for example, the Water Resources and Environment Administration (WREA) was established only last year and the ADB-supported Cumulative Impact Assessment of the Nam Ngum 3 Hydropower Project recommended that independent and empowered monitoring systems (including impartial grievance mechanisms) should be established for all hydropower projects.

⁶ Linked to Output 3.1 on conducting SEAs

There is a need to build capacity within the respective line agencies in Member States for:

- i) evaluating the socio-economic and environmental implications of proposed hydropower developments by means of Strategic Environmental Assessments (SEAs),
- ii) developing environmental and social policies which will enhance the sustainability of projects undertaken, and
- iii) ensuring a consistent interpretation of these policies and associated laws and regulations in independent project monitoring of hydropower projects and facilitation of impartial grievance mechanisms.

MRC, with its regional mandate and experience in capacity building, is in a position to fulfil this need in conjunction with development partners already working in this area.

Principal Activities

- Review the current situation in the line agencies of Member States with regard to implementation of SEAs, environmental and social policy implementation and monitoring of hydropower project development, particularly in the light of planned hydropower development in the basin.
- Identify the needs for capacity building in each country, which agencies are already providing support, and possibilities for transferring skills and experience already gained between countries.
- Elaborate proposals for appropriate capacity building programmes for each country, distinguishing between managerial and technical levels, and submit for consideration of the line agencies concerned.
- Revise as required and finalise the proposed programmes.
- Carry out the agreed capacity building programmes focussing predominately on on-the-job training – see Output 3.1.
- Prepare a report on the capacity building carried out.

Time Frame and Milestones

- Needs assessment and capacity building programme proposal: 3 months.
- Execution of capacity building programme: 6 months over 24 months.

Coordination with MRC Programmes

Coordination between ISH, BDP, EP and ICBP will be required to ensure consistency with the capacity building activities currently planned by these Programmes.

Inputs

- One riparian ISH Coordination Team member for about 2 person-months (needs assessment and capacity building programme).
- Travel to Member States.
- MRC personnel (EP and ICBP) and external advisors for training programmes – dependent on agreed scope of capacity building programme.

3.5.3 Component 3 : Regional Planning Support

Output 3.1 : Strategic Environmental Assessment and Regional Macroeconomic Evaluation of Proposed Mainstream Dams in LMB and Sub-Basin Hydropower SEAs and CIAs undertaken as Input to BDP – under MRCS Working Group⁷

Rationale

One of the principal findings of the 2006 ADB-MRC-WWF report on “The Current Status of Environmental Criteria for Hydropower Development on the Mekong Region – A Literature Compilation” was that there are clear advantages in moving environmental assessment upstream in the planning process from individual projects and considering the cumulative or basin-wide impacts using strategic environmental assessment (SEA) before embarking on major investments in hydropower. Following up on this recommendation the ADB has recently supported i) a pilot SEA of hydropower in Vietnam in the context of the Power Development Plan VI, as part of its Greater Mekong Subregion Core Environmental Program, and ii) SEA of the hydropower development plan for the Vu Gia – Thu Bon River Basin 2006-2010, Vietnam. Both of these SEAs were completed earlier in 2008. .

With the currently ongoing and planned construction of storage reservoirs in the Lancang River in the upper Mekong Basin there has been a resurgence of interest in the possibilities for hydropower development on mainstream Mekong in the lower Basin. A total of 11 run-of-river hydropower schemes on the Lao, Lao-Thai and Cambodian reaches of the lower Mekong have been proposed.

The regulation of flows in the Lancang River and implementation of any or all of the proposed mainstream projects in the lower Mekong Basin could have profound and wide-ranging socio-economic and environmental impacts in all four riparian countries. There is therefore an urgent need, confirmed at the Regional Multi-Stakeholder Consultation on MRC’s Hydropower Programme held in Vientiane on 25-27 September 2008, for a comprehensive SEA of the proposed mainstream hydropower development in the Lower Mekong Basin.

The principal objective of the SEA of the proposed mainstream hydropower development in the LMB would be to identify clearly the socio-economic and environmental impacts and implications of a range of alternative development strategies and thereby assist the governments of the Member States in decision-making on this issue. The SEA to be carried out would build on experience gained in the above-mentioned SEAs of hydropower development in Vietnam and would incorporate the results of the work by FP on fisheries (Output 3.3), NAP on navigation locks (Output 3.4) as well as that of other MRC programmes, e.g. IKMP on river morphology and BDP on water flow changes.

The SEA will be undertaken in close collaboration with NMCs and line agencies in MRC Member Countries responsible for the environment and power sectors in order to provide opportunities for capacity building and to foster full country ownership of the SEA’s findings and recommendations

⁷ Multidisciplinary Working Group under direction of MRCS OCEO

A major MRC goal is formulation of a rolling IWRM-based Basin Development Plan (BDP) for developing and managing the Basin's water resources. This requires, inter alia, a portfolio of programmes and projects, including hydropower, identified and ranked for consideration within each planning cycle. The SEA will also provide a clear context against which projects submitted to MRC within the PNPCA can be assessed.

Building upon the results and experience gained with the SEA of mainstream Mekong hydropower development, the 2004 CIA for Nam Theun 2 hydropower project and the CIA for Nam Ngum 3 hydropower project completed in 2008 under ADB technical assistance, sub-basin hydropower SEAs (incorporating CIAs) will be carried out for those tributary basins on which major hydropower developments are planned. They will provide input to the assessment process to be followed in formulation of the BDP.

Principal Activities

It is to be expected that the SEA of proposed mainstream dams will comprise the following basic steps organised under two Phases:

Phase 1: Scoping

- Scoping, establishing the temporal and spatial boundaries, the institutional context and decision scope, and delimitations in terms of issue coverage and stakeholder participation. Identification of a limited number of key strategic issues, such as but not limited to (i) Mekong mainstream hydropower development in the context of regional energy planning; (ii) affected people; (iii) fisheries and barrier effects of dams on fish migration; (iv) maintaining ecological integrity and biodiversity; (v) river morphology and sediment balance, and (vi) water quality and salinity intrusion. Conduct initial stakeholder consultations on scope and key strategic issues.
- Survey of baseline data availability and knowledge gap analysis on legal and policy framework and on social and environmental data and information.
- Identification of inputs to the SEA that can be provided by MRC programmes and scoping of those aspects that need to be investigated under additional studies that will be commissioned in Phase 2. Preparation of budgets and timelines for these MRC inputs and additional studies.

Phase 2: Assessment

- Baseline assessment, including a review of the legal and policy framework, establishing the regional energy demand over time, hydropower and other generation capacity development, and compiling all relevant and available social and environmental data and information. Additional focused studies, as required.
- Formulation of alternative mainstream hydropower development scenarios, based on the more general basin and sector-wide scenarios formulated under BDP2.
- Impact analysis for each of the scenarios, identifying risks and impacts and their regional distribution, mitigation measures, and likely future trends in socio-economic and environmental indicators.
- Assessment of the technical and economic feasibility of different mitigation measures to reduce risks and compensate for negative impacts, the potential and feasibility of alternative

livelihoods for affected people, along with their relationship to the key strategic issues identified during scoping.

- Documentation for decision-making, including cross-impact matrices, distribution of costs and benefits, sensitivity analysis.
- Preparation of specific recommendations on (i) the various mainstream hydropower scenarios; (ii) an adaptive management approach to Mekong mainstream hydropower development; (iii) an assessment framework for individual mainstream projects; and (iv) adaptation of the SEA methodology for application in sub-basin hydropower SEAs.
- Capacity building through learning-by-doing for NMC and line agency staff seconded to the SEA, and technical seminars targeted to technical levels at NMCs and line agencies on SEA methodology and assessment.

The principal activities involved in SEAs/CIAs for sub-basins will be:

- In consultation with BDP and line agencies and within available resource constraints, identify the tributary sub-basins for which hydropower SEAs are to be carried out and the corresponding priorities. BDP and IKMP intend to extend the Decision Support Framework (DSF) software to sub-basin level, starting with the 3S (Sekong / Sesan / Srepok) sub-basin. It is therefore proposed that the priority be given to this basin, followed by the Nam Theun, Nam Ngum and other selected sub-basins (e.g. Nam Ou).
- Build upon existing institutional linkages with the ADB TA on the 3S basin.
- In consultation with relevant line ministries (environment and power sectors) of Member States, preparation of Project Proposals for each of the sub-basin SEAs to be carried out by external consultants and MRC in collaboration with seconded personnel from the line agencies and other government agencies, supported by external consultants/advisors as required.
- Selection, contracting and mobilisation of national and international advisors/consultants.
- Carrying out of the SEAs, following essentially the overall procedure developed for the mainstream hydropower SEA (see above), adapted as required for each sub-basin and including an initial stakeholder consultation in the initial scoping phase.
- Preparation of a draft reports for each sub-basin SEA for presentation at a second round of stakeholder consultations.
- Preparation of final reports on the sub-basin SEA, providing portfolios of ranked hydropower schemes in each tributary basin as input to the BDP.

Time Frame and Milestones

The envisaged time frame for the mainstream hydropower SEA is.

- Stage 1 will take place from February 2008 to May 2009.
- Mobilisation of consultants for Stage 2 would be in May 2009 and Stage 2 would be implemented over a twelve month period with presentation of a Draft Report within 9 months.
- Final Report: 13 months

The sub-basin SEAs/CIAs will be initiated after completion of the mainstream hydropower SEA; the envisaged time frame is:

- Elaboration of Project Proposals: 2 months.
- Completion of sub-basin SEAs: 12 months

Coordination with MRC Programmes

Close coordination will be required between the MRCS/OCEO working group and EP, EP, FP, NAP, FMMP, AIFP, BDP, IKMP, ICCS.

Inputs

For the mainstream SEA:

- Total of about 11 person-months MRC personnel from different programmes.
- Around 5 person-months NMC staff from four Member States.
- Collaboration of line agencies in four Member States, with personnel (about 11 person-months) seconded to study team.
- About 15 person-months of external international consultants and 18 person-months national consultants (to be confirmed during the Phase 1).
- Travel within riparian countries.

For each sub-basin SEA:

- About 15 person-months MRC personnel from different programmes.
- About 2 person-months of one external international consultant and 30 person-months national consultants.
- Collaboration of line agencies and NMCs in Member States, with personnel (about 5 person-months) seconded to study team.
- Travel within riparian countries.

Output 3.2 : Scoping of Potential for Small-Scale Hydropower Undertaken – under ISH

Rationale

While large-scale hydropower development in the Mekong Basin could bring major economic benefits to the region, small-scale hydropower development could also make significant contribution to reducing poverty and maintaining sustainable communities in rural areas across the Basin. Generally with limited environmental impact, providing opportunity for employment generation and potentially replacing significant amounts of fossil-fuelled power generation if implemented collectively in a concerted and coordinated manner, small-scale hydropower plants could offer an attractive option for development of the Basin's water resources.

In general, two types of small-scale hydropower development can be distinguished: i) off-grid micro-hydropower plants with a generating capacity up to about 1,000 kW, and ii) mini-hydropower projects with installed capacity in the range 1 to 10 MW, probably grid-connected. For such schemes to be economically and financially viable and sustainable a range of technical,

environmental, social and institutional conditions must be in place. MRC, with its mandate to promote sustainable development of the Basin's water resources, is in a position to support the concerted and coordinated action required to put these necessary conditions in place.

Principal Activities

- Assemble data on the current situation in all four Member states with regard to the extent of small-scale (micro and mini) hydropower actually implemented.
- Review available technologies for micro- and mini-hydropower including low head systems suitable for irrigation or other canal / river systems.
- Review recently completed and ongoing rural electrification programmes (e.g. World Bank-supported Southern Provinces Electrification Project, Laos) as well small-scale hydropower studies (e.g. the Master Plan Study on Small Hydropower, Northern Laos, by JICA) in the Member States.
- Assemble and review information on policies, laws, regulations and plans relating to rural electrification, renewable energy utilisation and small-scale hydropower development in the Member States.
- Drawing on the above information and reviews, together with relevant international experience in the promotion of small-scale hydropower, prepare a draft Scoping Report on the potential for small-scale hydropower development in the Mekong Basin, identifying current constraints and possible measures to overcome those constraints (e.g. tax incentives, special financing models, tariff arrangements, etc.) as well as the role which MRC could play in furthering small hydropower development in the Basin.
- Facilitate discussion among possible financing agencies in support of small-scale hydropower development including private sector involvement.
- Conduct a regional workshop/seminar to discuss the draft Scoping Report.
- Finalisation of Scoping Report.

Time Frame and Milestones

- Draft Scoping Report: 8 months.
- Final Scoping Report: 10 months.

Coordination with MRC Programmes

- Consultations with BDP (and possibly IKMP on hydrological data).

Inputs

- One riparian ISH Coordination Team member part-time for 6 months over a 10 month period.
- Regional workshop/seminar
- Travel to Member Countries

Output 3.3 : Barrier Effects of Mainstream Dams on Fisheries Identified and Guidance Developed For Mitigation Measures for Fish Migration – under FP

Rationale

The science and engineering of the barrier effect of mainstream dams on the Mekong River to fish migration, their consequences and possible mitigation measures have not been discussed in a structured dialogue among professionals representing the full range of perspectives and with international experience in these issues.

As part MRC's hydropower-related activities an Expert Group meeting of international and regional experts and MRC personnel was held on 22-23 September 2008 to discuss these the likely barrier effects of the proposed mainstream dams and the possible options for mitigating i) the effects on fish and other aquatic life, and ii) the consequent livelihood impacts on communities upstream and downstream.

The Expert Group concluded that current technologies for fish passages as a mitigation measure are inadequate to cope with the large number of species and biomass of migratory fish in the Mekong river, each with different migratory patterns and behaviours. This is particularly the case for proposed mainstream dams, but also provides a major challenge for projects on tributaries where there are important spawning or feeding grounds.

The responsibility for demonstrating adequate mitigation measures for such projects rests with the developers. The role of MRC through ISH and the FP will be to provide advice on the suitability of various options for fish passage, as well as independent assessment and guidance on the likely outcome of particular mitigation measures proposed by developers.

To facilitate this process, a sub-group of the Expert Group will be commissioned to collaborate with FP through a number of meetings and in preparing guidance on suitable design measures and assessment reports on the effectiveness of possible mitigation measures for the barrier effects of the proposed mainstream hydropower projects.

Principal Activities

- Mobilisation of an Expert Group, comprising recognised international and riparian professionals and applied scientists with experience in fish migration, impact assessment, and engineering and social mitigation measures.
- Commissioning of background papers and case study summaries, the latter representing situations similar to those in the Mekong River and indicating where mitigation measures have or have not worked in practice.
- Organisation and holding of an Expert Group Meeting with the primary objectives of i) identifying the range of available options for mitigating the barrier effect of mainstream dams on fish populations in the Lower Mekong Basin, ii) predicting the effectiveness of the individual mitigation options, and iii) determining the extent to which these options need to be harmonised along the river.
- Elaboration of an output statement summarising the findings of the Expert Group Meeting and other publications. (The Expert Group's review report was published in the December 2008 issue of MRC publication "Catch and Culture").

- Periodic meetings of the sub-group of the Expert Group to provide advice on proposals put forward by developers for mitigation of the barrier effects, as well as update its guidance based on the results of studies currently being initiated by FP.

The activities likely to be undertaken by the Expert Group include:

- Review of the outcomes of mitigation measures from other tropical rivers having similar ecological characteristics.
- Identification and assessment of the likely effectiveness of the various proposed mitigation measures for both upstream and downstream passage of migratory fishes.
- Elaboration of a technical paper on fish passage for high-level dams (>10 m) on the Mekong mainstream. This could describe requirements and issues for the developers to consider.
- Definition of criteria that would determine success or failure of a particular mitigation measure and the indicators to be used in the evaluation of alternative options.
- Preparation of a technical paper on aquaculture as a substitute for the capture fishery that would be diminished as result of the impact of dams.
- Definition of further areas of assessment, research or study in the immediate term and longer term.
- Participation in meetings with government agencies, hydropower developers, etc.
- Assessment of proposals put forward by developers for mitigation of the barrier effects of fish migration.

In addition, the Expert Core group will be available to provide specific advice on particular issues, for instance, i) assisting with the preparation of the technical aspects papers developed by MRC for its governing bodies (as part of Output 1.2), ii) assisting MRC to prepare responses to EIAs (as part of Output 1.3) and iii) providing input to the Strategic Environmental Assessments (under Output 3.1).

Time Frame and Milestones

- The Expert Group Meeting was held in Vientiane on 22-23 September 2008, with the output statement summarising the findings of the meeting presented at the end of the meeting and published on the MRC website in December 2008.
- Report of Expert Group and FP on mitigation measures: March 2009.
- Continued ad hoc meetings of members of Expert Group, January 2009 to December 2010.

Coordination with MRC Programmes

Coordination will be required with OCEO, BDP and EP on the sub-Basin SEAs/CIAs.

Inputs

- FP personnel (Programme Coordinator and Chief Technical Advisor), about 2 person-months, for the Expert Group meeting.
- Around 2.5 person-months of external experts for the Expert Group meeting.
- External facilitator for Expert Group Meeting (1 month, funded by USAID).

- FP personnel (principally Programme Coordinator and Chief Technical Advisor), around 8 person-months over 2 years.
- Around 10 person-months of external experts.

Output 3.4 : Standard Specifications for Navigation Locks in Mainstream Dams – under NAP

Rationale

The 1995 Mekong Agreement guarantees freedom of navigation in the lower Mekong River, provides for the incorporation of navigation uses to be incorporated in any mainstream project, and gives MRC the mandate to promote water transport in the basin (Article 9).

With this mandate and the above-mentioned development plans in mind, the Initiative on Sustainable Hydropower is now supporting the MRC Navigation Programme in reaching agreement among Member States on standard specifications for waterways transport through the proposed mainstream dams, including standard sizes, layouts and operations of navigation locks.

Principal Activities

- Preparation of terms of reference and selection of external consultants.
- Review of the 1994 MRC Mekong Mainstream Run-of-River Hydropower study and other related reports, and compare the navigation facilities recommended in these documents with current international practices.
- Collection and analysis of data on i) socio-economic growth (recent trends, long-term economic growth projection including priority goals, strategies and actions identified in the National Strategic Development Plans), ii) transport demand and modal share forecasts given in recent relevant transport studies, iii) the current and forecasted navigation conditions and traffic, projects under implementation and planned for the improvement of navigation conditions, and iv) relevant hydrological and hydrographic information.
- Benchmarking study of the planning, design, construction and operation of locks on major inland waterways with similar conditions to those encountered on the Mekong River as well as existing standards, their possible adaptation to the Mekong context, lessons learned and international best practices.
- Elaboration of the principal technical and functional specifications for the design of locks on the Lower Mekong Mainstream.
- Elaboration of initial findings for discussion with NMCs and presentation at the Seminar on Waterway Safety and Navigation Improvements held at Jinghong, China, in October 2008.
- Preparation of Project Report.

Time Frame and Milestones

- Presentation of Project Report: 4 months (mostly completed).

Coordination with MRC Programmes

Coordination with NAP is underway.

Inputs

- One riparian NAP Programme Officer part-time (50%) over 4 month period.
- About 4 person-months of external consultants.
- Review of draft report by NMCs and participation of TNMC, LNMC and line agency representatives and in the Seminar at Jinghong, China, in October 2008.

Output 3.5 : Multipurpose Functionality of Hydropower Projects Identified – under AIFP***Rationale***

In Article 1 of the 1995 Mekong Agreement the Member States agreed to cooperate on “development ... of the water and natural resources of the Mekong River Basin ... in a manner to optimize the multiple use and mutual benefit of all riparians”.

It follows, therefore, that it should be ascertained whether any existing, planned or proposed hydropower projects offer the possibility of additional benefits from the Basin’s water resources beyond single purpose hydropower. These could include:

- Water supply for agriculture/irrigation or potable and industrial water supply, taken either i) directly from storage reservoirs or from pondage upstream of run-of river dams (utilising the increased water-level to permit gravity supply or reduced pumping costs) and thereby competing with power production, or ii) downstream of seasonal storage reservoirs, utilising the increased dry-season flows (and not competing with power production);
- Flood management in seasonal reservoirs, by following an operating policy which leaves some flood retention space in the reservoir at certain times of the year (thereby, however, generally reducing energy generation);
- Fisheries development, in storage reservoirs;
- Other, e.g. enhancement of designated conservation areas and/or forest reserves, recreation and tourism.

MRC has established a Hydropower Project Database of currently existing, under construction, planned and proposed hydropower projects in the Lower Mekong Basin (see Output 2.1) and is at present updating an extensive Irrigation Project Database of around 12,000 irrigation schemes in the four Member States. This knowledge base can be used to underpin an assessment of the multipurpose functionality of hydropower projects in the Basin, including those with transboundary impacts.

Principal Activities

- In consultation with the appropriate line agencies in each Member State, systematically assess whether each of the projects in the MRC Hydropower Project Database (Output 2.1), singly or in conjunction, could provide opportunity for any of the existing, planned or proposed irrigation project in the Irrigation Project Database to be enhanced/enlarged or enable a new potential irrigation project to be identified. The assessment will include mainstream projects (the Department of Alternative Energy Development and Efficiency, Thailand, has already identified the increased irrigation area which would be possible with the proposed mainstream Pak Chom and Ban Koum projects). Priority: existing, under construction, planned, proposed projects.

- Carry out a similar systematic assessment with regard to the other possible uses listed above and feedback into BDP.
- Incorporate the assessment results in the Hydropower Project Database, establishing links to corresponding entries in the Irrigation Project Database.
- Formulate draft recommendations to the appropriate line agencies in the Member states for consideration of the identified additional uses in pre-construction studies of the hydropower projects concerned and, if appropriate, for the inclusion of corresponding clauses in any Memoranda of Understanding, Concession Agreements or similar documents which may be signed with private developers. These recommendations will also outline, as appropriate, possible institutional, financing and operational arrangements for the projects.
- Conduct national workshops with relevant line agencies to discuss the draft recommendations (with participation of line agencies of other Member States, if any transboundary implications of any projects have been identified).
- Elaborate a report on scope for multi-functionality of projects.

Time Frame and Milestones

- Assessment of possibilities for multiple uses of hydropower projects: 2 months.
- Draft recommendations and workshops: 8 months.
- Final Report: 12 months

Coordination with MRC Programmes

- Close collaboration between AIFP and BDP will be required (and IKMP in connection with the project databases).

Inputs

- One riparian ISH Coordination Team member, part-time for 6 months over a 12 month period.
- One AIFP Programme Officer, 4 months.
- Input from other MRC programmes (FMMP, FP, IKMP), 2 person-months.
- Travel to Member States.
- Four national workshops and one regional workshop.

3.5.4 Component 4 : Sustainability Assessment and Financing

Output 4.1 : Options Identified for Financing Sustainability Enhancements of Hydropower Projects, Including Sustainability Incentives within Market and Regulatory Frameworks, and Benefit-Sharing Mechanisms Elaborated at Regional, National and Community Levels – under ISH

Rationale

The social and environmental impacts of the proposed mainstream run-of-river projects referred to above will have both local and basin-wide significance. Output 3.1 of the Initiative on

Sustainable Hydropower will be a Strategic Environmental Assessment (SEA) of alternative mainstream hydropower development strategies. It will, inter alia, evaluate these potential impacts and identify effective measures to mitigate adverse impacts and improve the sustainability performance of the projects.

These measures will need to be adopted, some probably jointly by two or more developers, and applied in a coordinated manner in all developments throughout the affected riparian countries. Special financing mechanisms and incentives may be required to ensure that this takes place. MRC, as a regional organisation, can facilitate discussion amongst governments, developers and financiers to identify these mechanisms and incentives.

The electricity sectors of all four MRC Member States are in various stages of transition towards deregulation and competitive market conditions. The private sector has been involved in thermal and hydropower generation in all countries to varying degrees over the past ten years. Electricity regulatory authorities have now been established in Cambodia (Electricity Authority of Cambodia - EAC), Thailand (Energy Regulatory Commission - ERC) and Vietnam (Electricity Regulatory Authority of Vietnam - ERAV). Vietnam is planning to establish a fully competitive power generation market within one or two years.

In addition, environmental regulatory agencies have also been established in the Member States, most recently the Water Resources and Environment Administration (WREA) in Lao PDR, with responsibilities for the issue of licenses for water use by development activities and regulation of environmental impacts.

The formation of these new market and regulatory frameworks offers opportunities for the introduction of incentives to implement good practices and to finance demonstrably sustainable hydropower projects. MRC, as a regional organisation, can facilitate exploratory discussions with the private sector, government agencies and developing banks on introducing such incentives.

Policy frameworks, laws and regulations for compensation of persons affected by the construction of a hydropower project are generally well established in the MRC Member States. Benefit sharing, in monetary or non-monetary form, during the operational life of the project can enhance the sustainability of the project and translate into development and poverty reduction opportunities to affected communities.

Although a relatively new concept in hydropower development, a number of reviews and analyses of policy options and implementation experience have been undertaken (e.g. World Bank, 2002, and UNEP Dams and Development Project, 2007). At the end of 2008 the Electricity Regulatory Authority of Vietnam (ERAV), with support from the Asian Development Bank produced a set of guidelines for benefit sharing with hydropower projects, which, after pilot application during 2008-09 are intended to pass into legislation in 2010.

Extension and adaptation of the international and Vietnamese experience to other MRC Member States would significantly improve the prospects for hydropower project sustainability throughout the Mekong basin.

Principal Activities

For identifying options for financing sustainability measures for proposed dams:

- Review of the results of the Strategic Environmental Assessments of dams (see Output 3.1) to establish those impact mitigation and sustainability improvement measures which may require special financing mechanisms.
- Consultation with relevant government ministries and state organisations, developers and international/private financing institutions to identify alternative sources of finance which would maintain financial returns and ‘soften’ any additional costs associated with implementation of mitigation measures (e.g. low interest loans, credit guarantees, equity or carbon credits that may not otherwise be available or attractive to carbon funds without some form independent assessment of sustainability performance, revolving funds, environmental protection levies, etc.).
- Review of regional and international experience with the identified mechanisms and assessment of the suitability in the context of the proposed mainstream Mekong hydropower projects.
- Elaboration of a Draft Report proposing suitable financing mechanisms and incentives.
- Conduct a regional workshop for presentation and discussion of Draft Report.
- Production of a Final Report on sustainability financing and incentive measures.

For the identification of sustainability incentives within market and regulatory frameworks more generally:

- Review of the results of the Strategic Environmental Assessments of dams (see Output 3.1) to establish those impact mitigation and sustainability improvement measures which may require special financing mechanisms.
- Assemble information on the current electricity market and regulatory frameworks in each Member State and likely future developments.
- Assemble corresponding information on water/environment regulatory frameworks in the Member States.
- Review the assembled information to assess the efficacy of these frameworks in promoting market-based and voluntary incentive-led measures for implementing good practices and financing sustainable hydropower projects (linked to Output 4.1a).
- Undertake exploratory discussions with the private sector, government agencies and development banks to identify ways to i) improve the efficacy of the frameworks, ii) enhance the legal framework and regulatory transparency, and iii) increase regional harmonisation and encourage effective implementation.
- Prepare a Draft Report with proposals for appropriate modifications to existing policy frameworks.
- Hold workshop to raise awareness and build capacity within relevant line ministries, regulators, developers and other stakeholders to review the proposals.
- Prepare a Final Report with recommendations for modifications to the market and regulatory frameworks in each Member State.

For the elaboration of benefit-sharing mechanisms at regional, national and community levels:

- Assemble information on instances of successful implementation of schemes for benefit sharing from hydropower projects and the associated policy frameworks.
- Review the assembled policy frameworks and the approach developed by ERAV and others in the light of proposed hydropower development on the mainstream Mekong and its tributaries.
- Prepare proposals for introducing benefit sharing mechanisms at project, sub-basin or regional levels within the Mekong Basin.
- Conduct a regional workshop with relevant line ministries, regulators, hydropower developers and other stakeholders to review the proposals and recommend an appropriate policy framework.
- Prepare a Final Report on the work carried out, including the results of the workshop, and outlining the steps required for implementation of the recommended policy framework.

Time Frame and Milestones

Options for financing sustainability measures for proposed dams:

- Start of work: during SEA (Output 3.1).
- Submission of Final Report on financing sustainability measures: 3 months.

Sustainability incentives within market and regulatory frameworks:

- Report and Workshop : 5 months
- Submission of Final Report on sustainability incentives: 7 months.

Benefit sharing mechanisms as at regional, national and community levels:

- Workshop : 5 months
- Submission of Final Report on benefit-sharing: 8 months.

Coordination with MRC Programmes

Coordination with EP and BDP will be required.

Inputs

Options for financing sustainability measures for the proposed mainstream dams:

- EP officer for about 0.5 person-months.
- External expert in sustainability financing for 3 months.
- Regional workshop.
- Participation of line agency staff in workshop.
- Travel to Member States

Sustainability incentives within market and regulatory frameworks:

- One riparian ISH Coordination Team (Technical/Environmental) member full-time for 4 months
- EP officer for about 0.5 person-months.
- Travel to Member States

- Ad hoc input from relevant water/environment and electricity regulatory agencies in Member States.
- Regulatory specialists may be required.

Benefit sharing mechanisms as at regional, national and community levels:

- One riparian ISH Coordination Team (Technical/Environmental) member full-time for 4 months.
- EP officer for about 0.5 person-months.
- External advisor with experience in benefit-sharing schemes for 3 months.
- Ad hoc input from relevant water/environment and electricity regulatory agencies in Member States and participation in regional workshop.
- Regional workshop.
- Travel to Member States.

Output 4.2 : "Environmental Considerations for Sustainable Hydropower Development" Field-Tested – Under EP

Rationale

The rapidly increasing development of the hydropower resources of the Mekong Basin could yield major positive economic and social benefits for the Greater Mekong Subregion (GMS), but could also bring with it significant negative environmental impacts if it is not implemented in a sustainable – in the broadest sense – manner. While the report of the World Commission on Dams presented an important step forward in understanding this sustainability issue and setting some of the key principles, there remains a pressing need for detailed practical guidance tailored to the specific circumstances of the Mekong region.

In recognition of this need, MRC joined forces with the Asian Development Bank (ADB) and the World Wildlife Fund for Nature (WWF) in 2006 to commission a report on "The Current Status of Environmental Criteria for Hydropower Development on the Mekong Region – A Literature Compilation". The principal findings of this report included: i) that environmental criteria are needed at all stages of the project/programme cycle and at all planning levels, and ii) that the Sustainability Guidelines (2004) and Sustainability Assessment Protocol (2006) of the International Hydropower Association (IHA) appeared to be the most comprehensive of the international environmental criteria frameworks reviewed and offered a best possible starting point for the GMS.

After a round of national consultations with the four Member States during 2007, the decision was taken by MRC, together with ADB and WWF, to initiate the Project "Environmental Considerations for Sustainable Hydropower Development" with the specific objective of developing an environmental assessment tool, based on the IHA Sustainability Assessment Protocol, which could be used at all stages of the hydropower planning process, possibly leading to a voluntary incentive-led code for private sector sustainable hydropower development, and the overall objective of ensuring that hydropower in the region is sustainably developed with

minimal adverse environmental impacts while remaining a viable renewable energy source supporting the region's economic development.⁸

Work on the Project was initiated in June 2008.

Principal Activities

- Formulation of a Project Proposal , involving: i) review of available information on relevant laws and regulations in Member States, ii) review of MRC's current tools (EIA/SEA system, TBEIA, DSF, IBFM, etc) for addressing biophysical, social and economic impacts of hydropower development, iii) identification of entry points for developing a sustainability assessment tool under ECSHD, and iv) preparation of a Draft Project Document for consideration at national consultations and at a Regional Multi-Stakeholder Consultation.
- Stage 1 – Testing Phase, involving: i) contextualisation of IHA Sustainability Assessment Protocol to conditions in Mekong Region and incorporation of the basin-wide perspective, ii) testing of the modified guidelines in current and/or planned SEA/EA MRC activities, for example for mainstream hydropower and the 3S Basin; iii) preparation of a report on the testing phase and recommendations to be considered under the wider review process of IHA, iv) national and regional consultations with Member States and Dialogue partners (China, Myanmar).
- Stage 2 – i) assessment tool integration into MRC programmes, ii) regional stakeholders consultations, iii) hydropower inventory database, iv) financing and incentive structures review, v) sustainability tool for national and regional acceptance, vi) institutional capacity needs assessment, vii) capacity strengthening and training, and viii) synthesis report and future action plan.

Time Frame and Milestones

- National consultations on Draft Project Proposal: held during July/August 2008.
- Regional Multi-Stakeholder Consultation on Draft Project Proposal: held in Vientiane on 25-27 September 2008 and national consultations in November-December 2008.
- Stage 1(Testing Phase): October 2008 to September 2009
- Stage 2 (Consolidation and Capacity Building Phase): June 2009 – October September 2010.

Coordination with MRC Programmes

Close coordination between ISH and EP will be required, together with consultation inputs from BDP, FP and AIFP.

Inputs (

- Formulation of Project Proposal (currently at final revision stage):
 - One riparian EP Programme Officer part-time (2 person-month) over 7 months.
 - 2 person-months of international expert.
 - Consultation visits to riparian countries.

⁸ The IHA Sustainability Protocol is currently being evaluated by a multi-stakeholder group involving governments, industry and NGOs – the Hydropower Sustainability Assessment Forum. The ECSHD initiative is linked into this process.

- Stages 1 and 2:
 - 1 riparian EP Programme Officer part-time (1.5 person-months) over 2 years.
 - Consultation visits to riparian countries.
 - Capacity building workshops and training courses.

External funding (to be secured – probably ADB, WWF)

- 8 person-months seconded national staff from line ministries (environment and power sectors - 2 from each Member State)
- 10 person-months from 4 national consultants (1 from each Member State).
- 9 person-months from 4 international experts.

Output 4.3 : Guidance Provided on Sustainable Management of Reservoir Watersheds – under AIFP/WSMP

Rationale

Climate, soil and geological conditions, ground cover vegetation and land use practices determine the amount of erosion in a river basin and the quantity of sediment that can be expected to accumulate in the reservoirs of any storage hydropower projects. High sediment loads can also adversely affect the operation of run-of-river hydropower schemes. In addition, runoff bio-chemical characteristics (nutrients, pesticides, mining and construction waste drainage, etc.) may detrimentally affect the water quality of reservoir releases downstream. Watershed protection and sediment management therefore represent important sustainability issues for many hydropower projects, particularly in areas subject to uncontrolled logging and shifting cultivation.

Over the past six years MRC has worked, under the GTZ-supported Watershed Management Programme (WSMP), with the responsible line agencies in the Member States to develop a comprehensive system for implementation of sustainable watershed management practices, with a programme of capacity building and institutional development at national, provincial, district and community levels. Pilot watersheds have been established in selected Mekong sub-basins in the four Member States. Under Phase III of the programme an activity is being introduced to extend WSMP work to consider land use changes resulting from mining and plantation developments and promote sustainability measures for hydropower reservoirs. Other watershed management activities are being implemented under the ADB-AFD supported Nam Ngum River Basin Development Project and the Nam Theun 2 Hydropower Project and it will be important to learn from the experiences of these and other model approaches.

MRC is therefore in a position to provide guidance to the relevant line agencies of Member States in the planning and implementation of appropriate watershed management plans in the catchments of existing, under construction and planned hydropower projects in the Basin, with a view to establishing a consistent approach throughout the Basin.

Principal Activities

- Assemble information on watershed conditions and current arrangements for watershed management in the drainage basins associated with existing, under construction and planned hydropower schemes in each of the four Member States.
- Undertake a comparative analysis of the assembled watershed management approaches in the four countries and emerging policies, such as the mining and energy policy in Lao PDR being supported by the World Bank, bringing in also the experience gained in other selected countries where successful water management arrangements for reservoir projects have been implemented.
- In close collaboration with the MRC-GTZ Watershed Management Project, prepare draft proposals for introducing consistent, incentive-led, sustainable watershed management practices in the drainage basins of hydropower projects in the Lower Mekong Basin, consistent with the declared policies of each Member State and indicating the appropriate institutional arrangements and regulatory frameworks.
- Conduct a regional workshop with relevant line ministries, regulators, hydropower developers and other stakeholders to discuss the draft proposals and identify possible improvements.
- On the basis of the results of the workshop prepare a set of Guidelines for Sustainable Management of Hydropower Project Watersheds.

Time Frame and Milestones

- Workshop: 5 months
- Submission of Guidelines: 8 months.

Coordination with MRC Programmes

Close collaboration with the MRC-GTZ Watershed Management Project of AIFP will be required.

Inputs

- One riparian ISH Coordination Team member part-time for 2 months over a period of 8 months.
- Input from AIFP, 3 person-months
- External advisor with experience in watershed management for 2.5 months.
- Input from relevant line agencies in Member States.
- Travel to Member States.

3.6 Interaction of Initiative on Sustainable Hydropower with existing MRC Programmes

As described above, MRC's proposed support to decision-making on sustainable hydropower development in the Basin covers four overarching themes. i) Encouraging dialogue and information dissemination between all parties, ii) Improving and expanding MRC's knowledge base on hydropower projects and associated environmental baseline information, iii) Providing

support to regional hydropower planning, and iv) Promoting measures to improve the sustainability of hydropower projects.

The interaction of the Initiative with MRC's existing programmes within these themes is illustrated in the Figure 2 for each of the Outputs described in section 3.5.

Under the first theme "Encouraging dialogue between all parties" MRCS increasingly incorporates a broader interpretation of stakeholder participation that goes beyond involvement of government agencies to include representatives of civil society and the private sector. A recent example of this is the regional consultation on the Basin Development Plan (BDP), held in Vientiane, Lao PDR in March 2008. The Expert Group Meeting on barrier effects of dams and mitigation options and the Regional Multi-stakeholder Consultation, held in Vientiane during September 2008, capitalised on the positive feedback to the BDP event. BDP, the Fisheries Programme (FP) and the Environment Programme (EP) were closely involved these two events.

Under the second theme "Improving and expanding MRC's knowledge base on hydropower projects and associated baseline environmental information", BDP's initial work on the hydropower data base will be expanded, the Environment Programme's basin-wide knowledge base of environmental information will be complemented by improved environmental baseline information for hydropower planning. This work will be carried out in close cooperation with MRC's Information and Knowledge Management Programme (IKMP).

Several programmes maintain routine environmental monitoring networks and database systems, integrating these will provide the baseline conditions from which the assessments will start. Predicting and assessing possible changes in river flow resulting from hydropower developments will involve the integration of information and expertise from BDP and IKMP (hydrology, modelling, geo-referenced databases etc.), EP (methodological work on strategic, cumulative and trans-boundary impact assessment, water-quality and bio-monitoring) and FP (monitoring of population dynamics and fisheries productivity).

Under the third theme "Support to Regional Planning" the most important work will be the Strategic Environmental Assessment (SEA) and Regional Macroeconomic Study of the eleven proposed mainstream Mekong hydropower schemes in the Lower Mekong Basin. Under the overall direction of the MRCS OCEO, this wide-ranging multidisciplinary effort will involve several MRC Programmes, including the Environment, Fisheries, Navigation and Agriculture, Irrigation and Forestry Programmes. Follow-up SEAs/CIAs on major sub-basins will also call on the capabilities of these MRC Programmes.

Discussions have been held with the Government of Lao PDR on providing advice to the Department of Energy in its study of proposed Mekong mainstream hydropower schemes. The discussions concluded that MRC could provide hydrological data and information on fisheries aspects (incorporation of barrier effect mitigation measures in project design) and standardised navigation locks. This work will be conducted mainly by the IKMP, FP and the Navigation Programme (NAP).

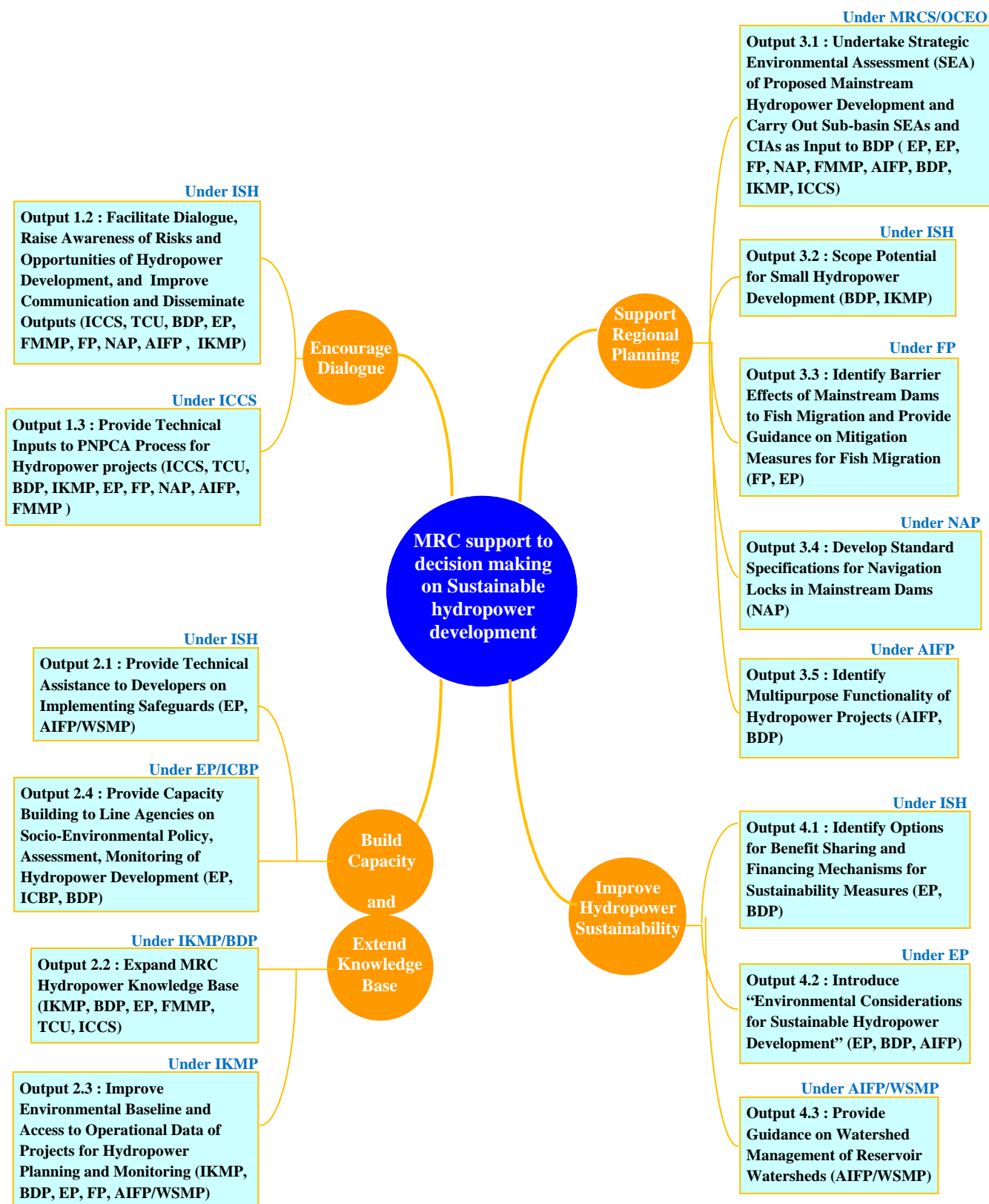


Figure 2: Thematic areas of collaboration of Initiative on Sustainable Hydropower with existing MRC programmes to support decision-making on sustainable hydropower development

Work under the fourth theme “Promoting measures to improve the sustainability of hydropower projects” also relies heavily on cross-sector collaboration with several MRC programmes. The main Output under this theme, “Environmental Considerations for Sustainable Hydropower Development”, will involve the EP in contextualisation and field-testing of the Sustainability Assessment Protocol of the International Hydropower Association (IHA) in the LMB and its use within the above-mentioned SEAs/CIAs. Other activities will identify mechanisms and incentives for financing and implementing sustainability measures for the proposed mainstream projects as well as those hydropower schemes on tributaries. In this connection the Agriculture, Irrigation and Forestry Programme and its GTZ-supported Watershed Management Project will provide guidance to line agencies and developers on sustainable watershed management.

4 Programme Implementation

4.1 Organisation

It is proposed that the management and coordination of the Initiative, once formally underway, will be assumed by a Coordination Team of specialists at MRCS within the Operations Division (see Figure 3).

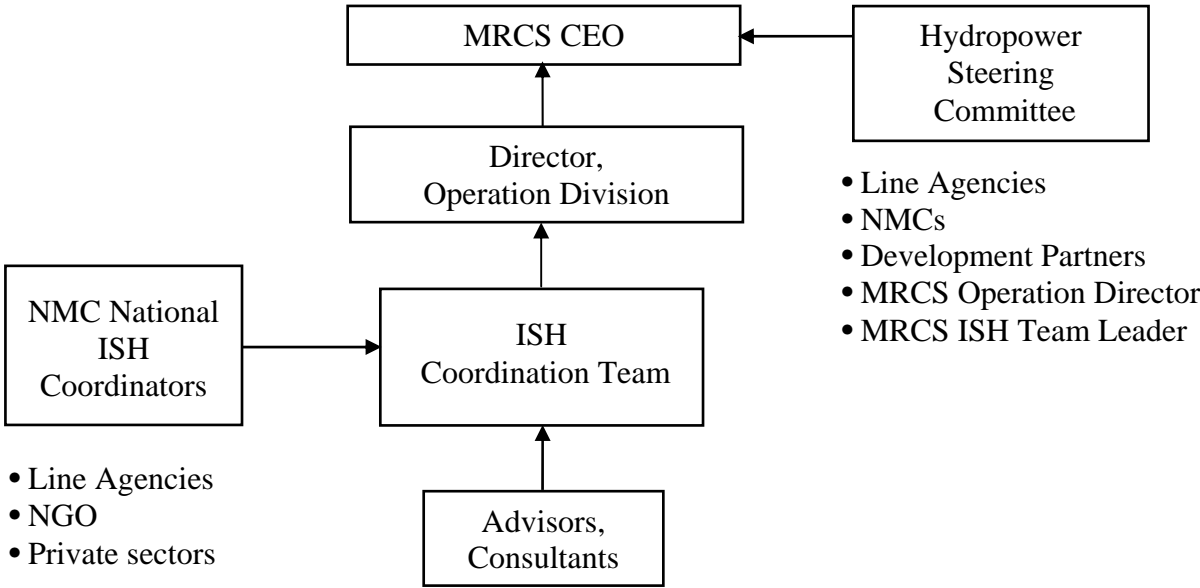


Figure 3: Initiative on Sustainable Hydropower – Organisational Arrangements

The precise composition of the small Coordination Team, led by the Initiative Coordinator, will be determined once the activities to be undertaken have been finalised and may subsequently vary as some activities are completed and/or new activities are initiated. The riparian Initiative Coordinator will be supported by an International Hydropower Policy and Strategy Consultant and one or more, as required, riparian Coordination Team Members.

While existing MRCS Programme staff members will undertake most of the proposed activities of the Initiative, it is envisaged that specialist advisors and consultants will also be commissioned where necessary. Collaboration with relevant national institutions in MRC’s Member Countries will be critical to the overall success of the Initiative.

An important function of the Coordination Team will be coordination with the ongoing programmes within the MRC and with MRCS management. In particular coordination is needed with the Basin Development Plan (BDP), Environmental Programme (EP), Fisheries Programme (FP), Navigation Programme (NAP), Flood Management and Mitigation Programme (FMMP), Information and Knowledge Management Programme (IKMP), Integrated Capacity Building Programme (ICBP) and International Coordination and Communications Section (ICCS). Coordination with the work of external institutions and organisations such as the GMS, ADB, World Bank, Lao Thai Hydro Forum, other financiers and developers, and civil society will also be essential.

It is proposed that a high-level Hydropower Steering Committee (HSC) reporting to the MRCS CEO will be established to advise the MRC on Mekong hydropower issues, to provide guidance on the work of the ISH Coordination Team and to evaluate the results of the various activities of the Initiative. It is envisaged that the HSC will be made up of:

- senior officials from relevant line agencies in all four Member Countries;
- representatives of the NMCs;
- representatives of Development Partners funding the ISH;
- the MRCS OPD Director;
- the ISH Team Leader (ex officio);
- on an ad hoc basis as required, participants from the Dialogue Partners, China and Myanmar, and external experts, as resource people.

A rotating chairmanship arrangement will be followed.

The HSC will meet formally twice a year to review progress of the Initiative on Sustainable Hydropower, possibly with less formal special meetings to deal with specific matters of importance that may arise.

4.2 Staff Resourcing

Preparation of this Draft Work Plan for the ISH has so far been led by a riparian Hydropower Project Manager, who joined MRCS in May 2008, supported since August 2008 by a short-term International Hydropower Consultant, using available resources which have already been allocated. A riparian Initiative Coordinator and Coordination Team Member will be recruited later when significant additional funding has been secured.

Recruitment of an International Hydropower Policy and Strategy Consultant has already been initiated. A riparian Initiative Team Leader and Coordination Team Member will be recruited later when significant additional funding has been secured.

In the interim period, assistance in the form of international and riparian consultants on Short Service Agreements is being utilised to support the implementation of priority ISH activities (see Section 4.5 below). The first of these were a riparian Events Coordinator and International Facilitator⁹ to assist with organisation of the Regional Multi-Stakeholder Consultation and members of the Fisheries Expert Group.

4.3 Role of NMCs

ISH Coordinators, funded by the Initiative, have already been appointed in the NMCs of all four Member Countries.

⁹ Financed under the cooperation of EcoAsia under USAID support.

As indicated in the introduction to Section 3.5 above describing the proposed Outputs of the Initiative, it is expected that the ISH Coordinators will be involved in almost all of these Outputs, carrying out the following activities:

- Collaboration in operational planning and project budgeting for works to occur in their respective countries;
- Collaboration in the preparation of the term of reference and budgets for workshops and training seminars and field trips or sites visits;
- Provision of assistance in the management of all technical, administrative and financial activities occurring in their respective countries to ensure the effective and efficient implementation of the project.
- Collaboration in the preparation of work agreements and budgets for line agencies delivering project specific tasks;
- Liaison with NMCs, line agencies, the private sector, NGOs and other relevant stakeholders in order to obtain their assistance for the implementation of MRC's Initiative on Sustainable Hydropower;
- Liaison with line agencies, the private sector, NGOs and other relevant stakeholders in order to obtain their assistance for the collection of comments, questions and suggestion related to the Initiative on Sustainable Hydropower;
- Liaison with Line Agencies, private sector, NGO and other relevant stakeholders in order to obtain their assistance for the collection of relevant data;
- Preparation and arrangement of all event logistics such as seminars, workshops, training, field visits.

In the case of the following Outputs some form of input over and above the normal coordinating activities of the NMCs is initially foreseen:

- Output 1.2 (Raised Awareness of Risks and Opportunities of Hydropower Development)
– 0.25 person-months from each NMC;
- Output 1.3 (Technical Inputs Provided to PNP/PCA Process)
– about 20 person-months in total over period 2009-2011;
- Output 3.1 (Strategic Environmental Assessment (SEA) and Regional Macroeconomic Evaluation of Proposed Mainstream Dams in LMB)
– 1.25 person-months from each NMC.

It may be noted that, in the detailed planning of the work plan for each individual Output, it may be found more appropriate to include a greater involvement of the NMCs, perhaps in lieu of the some of the inputs currently envisaged from riparian short-term consultants.

These additional NMC inputs, also be funded by the Initiative, as well as the normal activities of the ISH Coordinators described above will have a strong capacity-building aspect through participation in the various workshops and training sessions proposed in this ISH Work Plan.

It is not envisaged that separate national working groups will need to be established for implementation of the ISH Work Plan. The Thai NMC, for example, has indicated that it will consider using the national working group set up for the BDP as a coordinating unit for the ISH.

4.4 *Role of Line Agencies*

It is envisaged that there will be close collaboration with the responsible line agencies in each Member Country in implementation of the ISH Work Plan.

Currently, specific participation of staff seconded from the line agencies is currently foreseen within the following Outputs:

- Output 1.2 (Raised Awareness of Risks and Opportunities of Hydropower Development)
 - 0.5 person-months each from the environment and power ministries in the four countries;
- Output 3.1a (Strategic Environmental Assessment (SEA) and Regional Macroeconomic Evaluation of Proposed Mainstream Dams in LMB)
 - about 11 person-months in total in 2009-2010;
- Output 3.1b (Sub-Basin Hydropower SEAs and CIAs undertaken as Input to BDP)
 - about 13.5 person-months in total over period 2010-2011;
- Output 4.1b (Sustainability Incentives Introduced within Market and Regulatory Frameworks)
 - 1.0 person-months each from the environment and power ministries in the four countries;
- Output 4.1c (Benefit-Sharing Mechanisms Elaborated at Regional, National and Community Levels)
 - 1.0 person-months each from the environment and power ministries in the four countries.
- Output 4.3 (Guidance Provided on Sustainable Management of Reservoir Watersheds)
 - 0.5 person-months each from the environment ministries in the four countries.

These inputs to the ISH Work Plan will also have a strong capacity-building aspect through on-the-job training and participation in the various proposed workshops.

In addition to the above specific inputs it is expected in-kind support will be provided by the line agencies in the form of staff for informal meetings, correspondence and provision of reports and data required in the course of implementation of the Initiative.

4.5 *Priorities and Implementation Schedule*

A number of the planned activities of the Initiative have already been initiated using funding secured in 2007. These relate to:

- Output 1.1 : Initiative Managed Effectively – Preparation of Work Plan and coordination of ongoing activities
- Output 1.2 : Stakeholder Dialogue Facilitated – Developers Workshop (December 2008)
- Output 2.2 : Expanded MRC Hydropower Knowledge Base
- Output 2.3 : Improved environmental baseline information for hydropower planning (fish larvae survey)
- Output 3.1 : Strategic Environmental Assessment (SEA) and Regional Macroeconomic Evaluation of Proposed Mainstream Dams in LMB
- Output 3.3 : Barrier Effects of Mainstream Dams to Fish Migration Identified (Expert Group Meeting in November 2008)
- Output 3.4 : Standard Specifications for Navigation Locks in Mainstream Dams (draft report under finalisation)

- Output 4.2 : “Environmental Considerations for Sustainable Hydropower Development”
Field-Tested

The remaining activities of the Initiative on Sustainable Hydropower will be initiated in 2009-2010, depending upon the availability of funds.

The overall implementation schedule envisaged for the Initiative is presented in Annex 5.

4.6 Budget and Funding

A tentative estimated budget for carrying out the activities listed in Section 3 over the 4-year period 2008-2011 is expected to be in the order of \$ 7.3 million (see Annex 6).

Significant funding is already available to cover both project formulation costs and implementation of priority activities including development of this implementation strategy for MRC’s involvement in hydropower activities. Initial funds of EUR 1.0 m from the Government of Finland¹⁰ and \$ 500,000 from the Japan ASEAN Integration Fund (JAIF) are available for project formulation and for initial activities of the Initiative on Sustainable Hydropower. Proposals for further funding are being developed.

The estimated funding requirement over the period 2008-2011 is shown in Table 7.

Table 7 : Estimated Funding Requirement for Initiative on Sustainable Hydropower, 2008-2011

	Amounts in US\$				
	2008	2009	2010	2011	Total
Estimated expenditure	604,000	2,652,000	2,360,000	1,665,000	7,282,000
Available funding					
Japan ASEAN Integration Fund (JAIF)	234,000	213,000	53,000		500,000
Finnish Government Funds	370,000	915,000	215,000		1,500,000
Funding requirement		1,524,000	2,092,000	1,665,000	5,281,000

4.7 Planning, Monitoring and Reporting

Planning and monitoring of the individual activities of the Initiative on Sustainable Hydropower will be carried out by the permanent staff of ISH Coordination Team located in MRC Secretariat’s headquarters with guidance from national and regional meetings.

Inception, progress, interim and final reports will be prepared as appropriate for each of the Outputs outlined in Section 3 or major group of activities within each Output. The results-based MRC Monitoring and Evaluation (M&E) system, currently under development, will be incorporated.

¹⁰ The Government of Finland has agreed in principle for its funding originally allocated for 2009 and 2011 to be utilised in 2009 if required. Note that \$95,000 of this amount has been allocated for the formulation and initial activities of the ECSHD as a joint activity of the Hydropower Programme and administered by the Environment Programme.

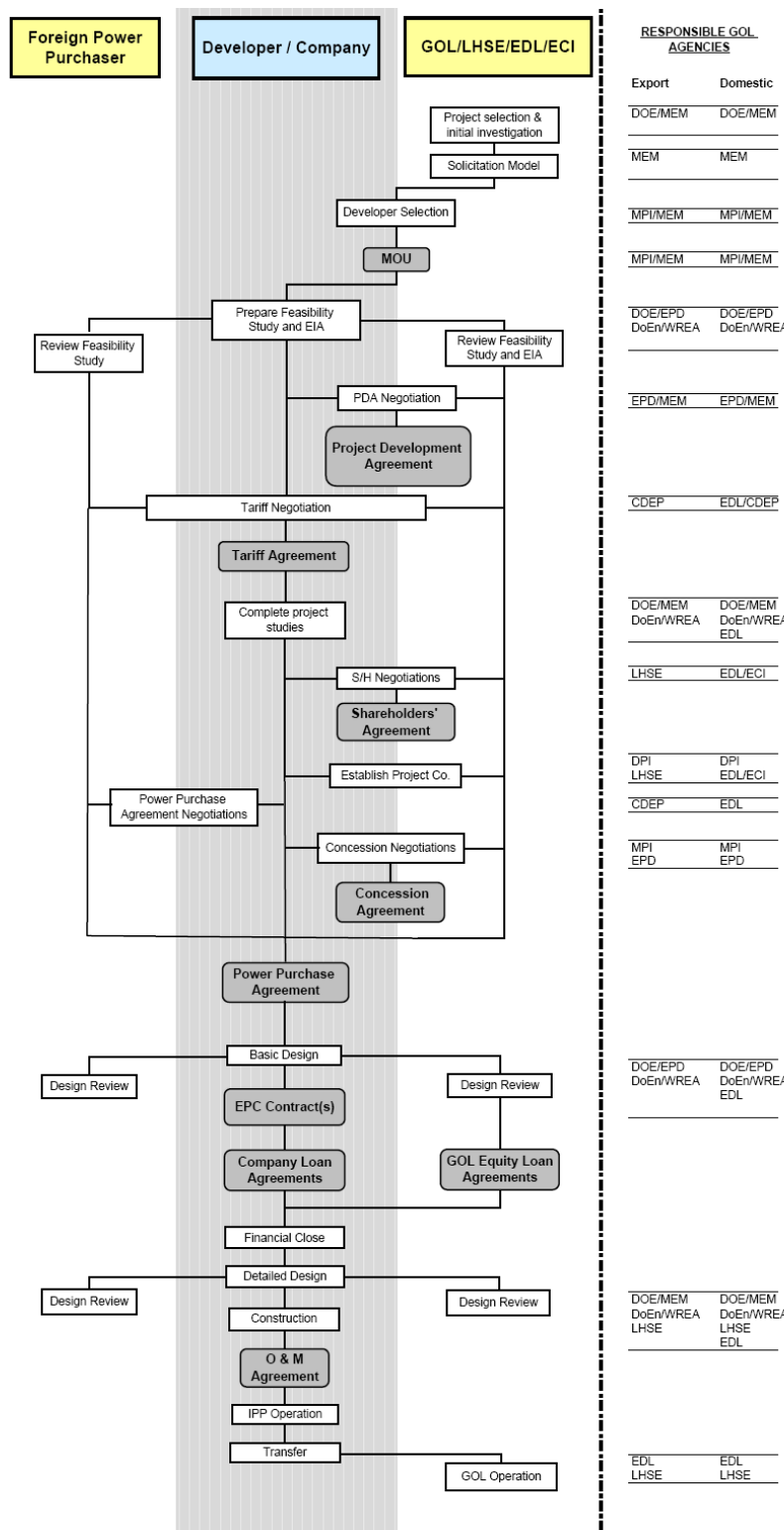
4.8 Risks and Mitigation Strategies

A number of risks and challenges can be identified that could impede a timely and effective implementation of the Programme and achievement of the immediate and overall Programme objectives. Some of these risks are common to all MRC programmes; some are brought by the wide range of stakeholders involved and the multi-disciplinary nature of the work to be carried out and the sensitivity of the subject. Mitigation strategies have been built into the Work Plan design as indicated in Table 8.

Table 8 : Risks and Mitigation Strategies Matrix

Risk	Impact	Significance	Likelihood	Risk management / mitigation
Inadequate access to information and dialogue with developers	Delays, lack of acceptance/uptake of Outputs of Initiative by one of the principal drivers of hydropower development in the Basin	High	Medium	Inclusion of extensive structured dialogue with developers (invitations to participate in regional consultation meetings, specific developer workshops on coordinating environmental mitigation measures, etc.)
Inadequate funding for MRC activities	Failure to produce all Outputs required to achieve objective of promoting and facilitating sustainable hydropower development	High	Medium	Need to prioritise activities – e.g. SEA of mainstream dams, fisheries expert sub-group meetings.....
Timeframe of developers and government for decisions too short for conducting necessary studies and analysis	Outputs of Initiative ineffective; lower sustainability standards of hydropower development in the Basin.	Medium	High	Fast-tracking of urgent activities; early initiation of work on larger Outputs by splitting into small initial stage (e.g. SEA of proposed mainstream dams)
Inadequate baseline information on fisheries migrations and fish behaviour	Delays in key Outputs (e.g. SEA of proposed mainstream dams) and consequent irrelevance of Output	Medium	High	Immediate initiation of work on fisheries impacts (with international meeting, formation of Expert Group, etc.)
MRC is perceived as a promoter of hydropower projects by civil society	Negative media coverage and reduction in donor support for MRC's programmes	Medium	Medium	Need for objectivity and independence; increased communications and cooperation with all sectors.

Annex 1 : Flowchart of Hydropower Planning Process in Lao PDR



Source: http://www.poweringprogress.org/download/IPP_PROJECT_IMPLEMENTATION_PROCESS.pdf

Annex 2 : Points Arising from First Round of National Consultations, July/August 2008

Summary of recommendations and suggestions recorded in the Meetings Notes on National Consultations held in Bangkok (8 July 2008), Hanoi (10 July 2008), Vientiane (21 July 2008) and Phnom Penh on 6 August 2008).

Topic / Issue	Cambodia	Lao PDR	Thailand	Vietnam
1) Hydropower development planning in the Mekong Basin	a) To ensure regionally equitable and sustainable development, regional dialogue and networking on hydropower development should include river basin organizations.	a) Dialogue with China is important because China regulates Mekong flows and is also a potential power purchaser and developer; possible arena is GMS. b) Fisheries and navigation are integral elements of hydropower dams, especially on mainstream; it is necessary to find optimal solution to conjunctive hydropower generation, navigation lock operation and fish migration.		a) Hydropower development in the Basin should be seen in context of the regional energy sector, in particular realistic future energy demands. b) Small hydro promotion may not be a priority.
2) Mainstream dams	a) Clarification of scope of GOL Optimization Study requested. b) Inclusion of environmental considerations in Optimization Study recommended	a) While 1995 Mekong Agreement does not preclude mainstream dams, their impacts must be environmentally and sociologically acceptable. b) MRCS could act as main dialogue facilitator to promote cooperation and best practices.	a) Agreement with prioritization mainstream dams and fisheries issues. b) Ministry of Energy cooperating with GOL on two mainstream projects. c) Both design and operation should be optimized. d) Difficulties in dialogue and cooperation with private sector developers noted.	In view of complexities involved, scale of projects, trans-border implications, and social and environmental risks involved, past experience in the basin could be useful.

Topic / Issue	Cambodia	Lao PDR	Thailand	Vietnam
3) Cost-benefit analysis and benefit sharing	Cost -benefit analyses, addressing project impacts and opportunities for benefit sharing, should be included in the Hydropower Programme.		Flood damage limitation, drought prevention, resettlement, loss of forest, biodiversity corridors, impact of climate change, and potential for multipurpose development should be included in cost-benefit analyses.	
4) SEA and CIA		<p>a) Public consultation is an essential tool for understanding critical aspects of projects, but must be well planned and structured in order to avoid confusion and conflicts.</p> <p>b) SEA and CIA are new concepts to Lao PDR and integration into hydropower is welcomed; Department of Environment wishes to be involved with view to introducing inspection and monitoring of all stages of project development.</p>	<p>a) Hydropower SEA important for the BDP process.</p> <p>b) SEA should identify options for environmental and social mitigation measures.</p> <p>c) Hydropower SEA should take Thailand's SEA guidelines into account.</p>	MRC as a regional organisation is well placed to carry out a SEA for mainstream dams; an early start of this SEA would be appreciated.
5) Capacity building	Include capacity building for social safeguards (resettlement)	Include capacity building for lock operators.		
6) Information exchange		Information flow between riparian countries is an important element of cooperation; in particular hydropower database and environmental baseline information for hydropower planning.		
7) Formulation of MRC Hydropower Programme (HP)	<p>a) HP focuses strongly on mainstream hydropower development, but attention must also be paid to hydropower development on tributaries.</p> <p>c) Key aspect in framing the HP should be</p>	Crucial that all tasks are capable of promoting the implementation of dams in a sustainable manner.	Fast pace of hydropower development in the basin requires HP to focus on key issues in a practical and robust way.	<p>a) HP formulation process needs to be further explained.</p> <p>b) Ambitious portfolio of fast-tracked activities should be re-considered, with priority to environmental implications of</p>

Topic / Issue	Cambodia	Lao PDR	Thailand	Vietnam
	<p>sustainability.</p> <p>d) Clarification requested on the process and timing of drafting of the HP.</p> <p>e) Clarification requested on opportunities for national agencies and institutions to cooperate with MRC on HP.</p>			<p>hydropower projects and optimisation of mainstream projects.</p> <p>c) Changes from the MRC Hydropower Strategy of 2001 should be indicated.</p> <p>d) HP should include:</p> <ul style="list-style-type: none"> - description of current hydropower development in the basin; - analysis of hydropower planning processes in riparian states; - role of HP in implementation of PNPCA; - identification of MRC's role in hydropower development in the region; - clearly defined objectives, milestones and outputs; - roles of line agencies and respective institutional arrangements,

Annex 3 : Points Arising from Second Round of National Consultations, November/December 2008

Summary of recommendations and suggestions recorded in the Meetings Notes on National Consultations held in Do Son, Vietnam (24 November 2008), Bangkok, Thailand (26 November 2008), Siem Reap, Cambodia (15 December 2008) and Thalat, Lao PDR (19 December 2008).

Topic / Issue	Cambodia	Lao PDR	Thailand	Vietnam
a) Programme Status and Title	<ul style="list-style-type: none"> • In December 2004 the MRC Council endorsed the formulation of a Hydropower Programme and at the 13th Council meeting in Hanoi in December 2006 the Council approved the MRC Work Plan 2007, including formulation of concepts, proposals and fundraising activities for the new Hydropower Programme. • Cambodia has significant hydropower resources and the proposed programme will be of considerable assistance to Cambodia. • The proposed title “Sustainable Hydropower Programme” is appropriate and the Cambodian delegation agrees with the proposed title. • Most issues relating to the sustainability of hydropower projects are covered by the proposed programme and all measures undertaken to take advantage of opportunities while minimising risks. 	<ul style="list-style-type: none"> • The LNMC agrees fully with the proposed title “Sustainable Hydropower Programme”, in particular with the emphasis on sustainability. The envisaged activities and outputs are very relevant to the present situation and requirements of the Lao PDR. 	<ul style="list-style-type: none"> • The proposed Sustainable Hydropower Programme is not in agreement with two outcomes of the MRC Council meeting on 7 November 2008. • The proposed work programme does not fit into the four Core Programmes of the MRC. • The proposed programme would involve too much hiring of additional staff and consultants, and would yield limited benefit to the riparian countries. • IKMP and BDP can carry out any work that is required to be done on hydropower development in the Basin. 	<ul style="list-style-type: none"> • The proposed title “Sustainable Hydropower Programme” is appropriate, since it focuses on essential and important aspects of hydropower development, and should therefore be retained. • An alternative title could be “Sustainable Hydropower Development Programme”.
b) Programme Structure			<ul style="list-style-type: none"> • Consideration could be given to dropping the use of Track 1 and Track 2, since it distinguishes only between Outputs on which work has already been initiated and Outputs on which work has yet to be started. 	<ul style="list-style-type: none"> • There may be no need for use of Track 1 and Track 2 after the programme has been initiated and the implementation schedule has been drawn up.

<p>c) Component 1 (Programme Management and Communication)</p>	<ul style="list-style-type: none"> • Output 1.3 (Technical Inputs Provided to PNP-CA Process): The functions of MRCS and the NMCs should be clearly defined in the case of the Prior Consultation and Agreement. Delays in waiting for MRCS detailed review could be problematic. Time required could be reduced by i) reviewing several projects at once, and ii) carrying out SEA of the proposed mainstream dams (Output 3.4) as soon as possible. 	<ul style="list-style-type: none"> • Output 1.2 (Dialogue Facilitated): River Basin Organisations will soon be established and should be brought into the dialogue process. There are no local NGOs in Lao PDR; mass should be included. • Output 1.3 (Technical Inputs Provided to PNP-CA Process). Dams on tributaries need only Notification, while those on the mainstream require Prior Consultation and Agreement. Any country may express objections and no country should construct unilaterally. The Sambour project, although located downstream, should be submitted for consultation, just as for the proposed Lao dams, since it would also have transboundary impacts. 	<ul style="list-style-type: none"> • Output 1.5 (Improved Communication and Dissemination of MRC Outputs): The programme document should present the MRC view or opinion on development of the Basin's hydropower potential. MRC should indicate how this hydropower potential of the LMB can be favourably harnessed, in order to evince support for hydropower development. 	<ul style="list-style-type: none"> • Outputs 1.2 (Dialogue Facilitated) and 1.3 (Technical Inputs Provided to the PNP-CA Process) are core activities of the Component and warrant an intensive level of effort. They could also be combined as a single Output. • Similarly, Outputs 1.4 (Raised Awareness of Risks and Opportunities of Hydropower Development) and 1.5 (Improved Communication and Dissemination of MRC Outputs) could also be combined into a single Output, since they both have essentially the same target.
<p>d) Component 2 (Capacity Building and Knowledge Base Support)</p>	<ul style="list-style-type: none"> • Output 2.4 (Capacity Building) for Strategic Environmental Assessment (SEA) and Cumulative Impact Assessment (CIA) will be very useful for Cambodia. Experience of Vietnam with SEA of the Power Development Plan VI (supported by ADB-GMS) and SEA of the Vu Gia – Thu Bon river basin development plan should be shared. • Output 2.4 (Capacity Building) for formulation and implementation of environmental policies and regulations dealing specifically with hydropower development is required, particularly for the period of construction. 	<ul style="list-style-type: none"> • Output 2.3 (Improved Access to Hydro-meteorological Data of Developers): The Lao Department of Hydrology and Meteorology (DHM) has been re-structured and is now under the Water and Environment Administration (WREA); there should be no problem to incorporate new data from developers in the current DHM database and publish in the MRC Hydrological Yearbook. • Output 2.4 (Capacity Building) to strengthen development of environmental monitoring systems will be important for the Lao PDR. 		<ul style="list-style-type: none"> • Output 2.1 (Expanded MRC Hydropower Knowledge Base) is vital for the DSF being used by BDP and it is important to expand the current database to cover operating rules followed by the developers of the various hydropower projects.

	<ul style="list-style-type: none"> • Output 2.4 (Capacity Building). Opportunity should be taken for exchange of experience, e.g. Lao experience with resettlement, restoration of disrupted livelihood, engagement of NGOs, etc. • Consideration could be given to overseas study tours as part of capacity building. 			
e) Component 3 (Regional Planning Support)	<ul style="list-style-type: none"> • Output 3.1 (Standard Specifications for Navigation Locks in Mainstream Dams): Reference to the Article 9 of the 1995 Mekong Agreement could be made in the description of this output. • Output 3.2 (Guidance Developed on Mitigation Measures for Fish Migration). Reference could be made to the appropriate Article 9 of the 1995 Mekong Agreement in the description of this output. • Output 3.4 (Strategic Environmental Assessment and Region Macroeconomic Evaluation of Proposed Mainstream Dams) should include a focus on social aspects and involvement of local people in decision-making; Cambodia will need the support of MRC in implementing its hydropower development plans with clear sustainability concepts. The Vietnam experience could be used to prepare guidelines for hydropower SEAs . 	<ul style="list-style-type: none"> • Output 3.1 (Standard Specifications for Navigation Locks in Mainstream Dams): Thailand has requested 500 ton capacity to be taken as standard design. However, design for a high tonnage could lead to high investment costs. Transfer of cargo from only occasional large ships to smaller ships is a possibility. • Output 3.4 (Strategic Environmental Assessment and Region Macroeconomic Evaluation of Proposed Mainstream Dams): China is closely involved in much of the proposed development in the Lower Mekong Basin and it is necessary to maintain dialogue and promote cooperation with China to ensure equitable and sustainable use of Mekong water resources. Dialogue with local authorities and affected people should be initiated so that all implications are understood. The example provided by Nam Theun 2 should be followed. China, ASEAN and GMS can also provide support. 	<ul style="list-style-type: none"> • An essential input to the work on Output 3.4 (Strategic Environmental Assessment of Proposed Mainstream Dams in LMB) is information on fish migration and spawning grounds as well on the likely impact of the dams on fisheries in the mainstream river and in floodplains. This will require considerable research and may take not just one year, but possibly up to 3 or 4 years. 	<ul style="list-style-type: none"> • Output 3.5 (Guidance Developed for Mitigation Measures for Fish Migration): There is an urgent need for more detailed information on the likely impact of dams on fisheries and on the appropriate means of mitigating this impact. This information is important for BDP in its assessment of alternative basin development scenarios. • Output 3.7 (Multipurpose Functionality of Hydropower Projects) is seen as an important output of the Programme. • It should be considered whether some related outputs, e.g. 3.2 and 3.5, or possibly even 3.1 to 3.5, can be pulled together as a single Output. • It was noted that there is no mention of climate change in the descriptions of the Outputs. However, it was pointed out that IKMP and BDP are taking this into consideration in the basin development scenarios and assessment work.

f) Component 4 (Sustainability Assessment and Financing)	<ul style="list-style-type: none"> • Mention of Strategic Environmental Assessments (SEAs) in the description of Output 4.1 (“Environmental Considerations for Sustainable Hydropower Development” field-tested) could indicate an overlap with Output 3.4 (Strategic Environmental Assessment and Region Macroeconomic Evaluation of Proposed Mainstream Dams). It was pointed out, however, that Output 4.1 involved only adaptation of the essentially project-based IHA Assessment Protocol for use within SEAs of proposed development plans. • Mention was made of the need to reconcile the functions of the electricity regulator (keeping costs and tariffs low) and the environmental regulator (ensuring sustainability standards). It was pointed out that to some extent this matter would be addressed by Output 4.2 (Sustainability Incentives within Market and Regulatory Frameworks). 	<ul style="list-style-type: none"> • Output 4.4 (Guidance Provided on Sustainable Watershed Management of Reservoir Watersheds): Consideration could be given to the incorporation of climate change and adaptation measures in this Output. 		<ul style="list-style-type: none"> • It was noted that some Outputs are rather complex and depend on other Outputs, e.g. Output 4.1 (“Environmental Considerations for Sustainable Hydropower Development” field-tested) will be part of Output 3.4 (Strategic Environmental Assessment of Proposed Mainstream Dams). • Output 4.3 (Benefit-Sharing Mechanisms Elaborated): Cross-border issues should be addressed in this Output. The time input foreseen could be rather short. • It is difficult to distinguish between Outputs 4.3 (Benefit-Sharing Mechanisms Elaborated) and 4.4 (Guidance Provided on Sustainable Management of Reservoir Watersheds).
g) Organisation and Budget	<ul style="list-style-type: none"> • Consideration should be given to including the CEO in the Hydropower Steering Committee (HSC) with the HSC then reporting to the Joint Committee. • Given the envisaged scope of work, consideration could be given to the formation of national working groups for some topics. 	<ul style="list-style-type: none"> • Given the importance of hydropower development in the LMB consideration should be given to assigning the Hydropower Steering Committee (HSC) a high-level role within the MRC. 		

	<ul style="list-style-type: none"> • The matter of whether any special approval of the composition of the HSC was raised. • The HSC is not the appropriate forum for engagement of civic society. • There is perhaps no need for Dialogue Partners in the HSC. • Ad hoc inclusion of representatives from academia and research organisations in the HSC could be considered. • A regional meeting is considered necessary to finalise the Document before its submission to the Joint Committee in March 2009. 	<ul style="list-style-type: none"> • In the light of the envisaged large scope of work, consideration could be given to the formation of a national hydropower unit within the Lao NMC, which will need equipment, staff and facilities to permit monitoring, evaluation and coordination, and which will support the HSC. • The HSC is not the appropriate forum to engage civic society, but mass organisations in Lao PDR could be considered. • Establishment of a Construction Monitoring Hydropower Steering Committee is suggested, with a dedicated office to ensure continuity. • The Minister will be consulted with regard to the composition and level of responsibility of HSC. 		
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Annex 4 : Points Arising from National Consultation with Thailand, February 2009

Summary of recommendations and suggestions recorded in the Meetings Notes on the National Consultation on the draft Work Plan for MRC's Initiative on Sustainable Hydropower held in Bangkok, Thailand on 18 February 2009.

<p><i>Section 1 : Background</i></p>	<ul style="list-style-type: none"> • The power demand forecast for Vietnam in Table 1 of the draft Work Plan appears to rather high and the power demand forecast for Thailand has recently been revised (downward). The values in the table should be reviewed and, if appropriate, revised. • All of the 3,235 MW existing installed capacity given in Table 2 of the draft ISH Work Plan, including O Chum in Cambodia, is located on tributaries. • Since the demand forecast is for all of Thailand, the hydropower projects listed in Annexes 1, 2 and 3 should cover all of Thailand, not just NE Thailand.
<p><i>Section 3 : Design of Work Plan</i></p>	<ul style="list-style-type: none"> • The four proposed Components will be appropriate for the next 3 years. • Output 1.1 includes dialogue with developers. It should be made clear how this dialogue will be conducted, since direct communication with developers may go beyond the mandate of MRC. The contact needs to be through the NMCSs and line agencies. This is also the case in connection with the Output relating to regulatory frameworks. MRCs noted that in the case of the Developers Workshop held in Vientiane in December last year, MRC assisted in the organisation of the workshop at the invitation of the Ministry of Energy and Mines, Lao PDR, though the LNMC and the workshop itself was hosted by the Department of Electricity. Similar arrangements are being followed for the Developers Workshop to be held in Phnom Penh next month. • It is important that awareness of the opportunities of risks of hydropower development is raised early (Output 1.2), for example in connection with the proposed Ban Koum mainstream project). Otherwise the NGOs may object strongly. • There is still a lot of uncertainty about the impact of dams on fisheries because of lack of data and knowledge. MRCs has done a considerable amount of studies and navigation, but there is still much uncertainty in forecasting the impact of the dams on fisheries with good accuracy. • The description of the activities to be undertaken under Output 3.3 (Barrier Effects of Mainstream Dams to Fish Migration Identified and Guidance Developed for Mitigation Measures for Fish Migration) should be expanded to include more details. • Navigation is a serious concern. By raising water-levels it would be possible for 500 ton ships to pass, but there is nothing in the Work Plan about improving navigation in rocky places. TNMCS suggested that the Navigation Programme (NAP) should coordinate to ensure navigability over the whole length of the river is possible. • The suggested work programme for navigation locks on pp. 45-26 should be reviewed to verify whether it is appropriate. • If all proposed mainstream dams are constructed, the impacts, particularly to fisheries and navigation, would be very significant. For this reason inclusion of the Strategic Environmental Assessment in the proposed ISH Work Plan is considered reasonable.

	<ul style="list-style-type: none"> • There should have been involvement of the NMCs in formulation of the ToR for the Strategic Environmental Assessment (SEA) of the proposed mainstream dams. • It is not clear whether the proposed Strategic Environmental Assessment (SEA) covers all impacts. A check for duplication of tasks should be made. According to p. 42 of the Work Plan an input of 5 person-months NMC staff will be required for the mainstream SEA, but it is not clear if TNMC will be able to second people to the SEA team. MRCS indicated that all the person-months indicated in the Work Plan are 'design' estimates, for use at present in estimating budget requirements, and may well be different when the actual work is carried out. • It should be checked whether the ToR for the SEAs, for both mainstream and sub-basins, cover health impact assessment. MRCS noted that the ToR had been formulated very generally, with an initial scoping phase to ensure that all relevant impacts are identified and assessed.
<i>Implementation arrangements</i>	<ul style="list-style-type: none"> • It is agreed that the Initiative on Sustainable Hydropower requires just a small coordination team. • A cross-agency working group comprising the existing Thai National BDP Working Group and any other necessary agencies would be mandated to help guide the ISH.
<i>Budget</i>	<ul style="list-style-type: none"> • The proposed budget for PNPCHA-related activities may be excessive; more should be allocated to awareness issues (Output 1.2). • The budget allocation needs some adjustment since the structure of Components/Outputs will require each country to have its own team to work on the proposed activities. A national team will be required for organising workshops and meeting and for clarifying all matters for the country. Implementation of the Work Plan could be difficult without such a team in each country. Some participants felt that almost all the budget is going to MRCS and advisors, nothing to the countries. The Work Plan document should describe the assistance, including capacity building, which will be extended to each country. • There should be consistency in the activities indicated in the work schedule (Annex 6) and the summary of the estimated budget (Annex 7).
<i>Annexes</i>	<ul style="list-style-type: none"> • There are many missing data items in the hydropower database tables in the Annexes and the tables need to be updated. MRCS subsequently considered it appropriate to remove the tables and address this under Component 2 in the start-up phase.
<i>Overall Document</i>	<ul style="list-style-type: none"> • The Thai side had requested changes to the MRC hydropower document previously presented because it did not appear that a new MRC programme was required nor was it clear precisely what the new programme itself would be doing. Not all the requested changes have been made, but in the new document the responsibilities are more clearly defined. Bearing in mind that hydropower is important for the other MRC countries, in particular Lao PDR, the Thai side feel considers that the proposed Work Plan is generally acceptable, with some improvements/modifications. • The involvement of the NMCs in each of the Outputs needs to be made clear, e.g. for organising workshops, etc. Also, for example, in the proposed SEA for the 3Ss basin. • The ISH Work Plan should indicate clearly how support will be provided to the NMCs and the line agencies. In the case of Thailand it is likely that the existing BDP work group, comprising NMC and line agency representatives, will be used for hydropower-related activities.

Annex 5 :

Initiative on Sustainable Hydropower – Implementation Schedule

Component / Output	2008	2009	2010	2011
1 Management and Communication				
1.1a Regional and National Consultations held and ISH Work Plan formulated	■			
1.1b Initiative managed effectively		■	■	■
1.2a Dialogue facilitated: Ministerial briefings, dialogue with developers and financiers, multi-stakeholder forum, Dialogue Partners	■	■	■	■
1.2b Raised awareness of risks and opportunities of hydropower development		■	■	■
1.2c Improved communication and dissemination of MRC Outputs		■	■	■
1.3 Technical inputs provided to PNPCA process		■	■	■
				Technical inputs
2 Capacity Building and Knowledge Base Support				
2.1 Technical assistance provided to hydropower developers on safeguards and monitoring				■
2.2a Expanded MRC hydropower knowledge base		■	■	■
2.2b Improved access to hydrometeorological and operational data of hydropower developers		■	■	■
2.3 Improved environmental baseline information for hydropower planning	■	■	■	■
2.4 Capacity building provided to line agencies for implementation of SEAs/CIAs, environmental and social policy implementation, and monitoring of hydropower project development			■	■
3 Regional Planning Support				
3.1a Strategic Environmental Assessment (SEA) and regional macroeconomic evaluation of proposed mainstream dams in LMB		■	■	■
			SEA proposed mainstream dams	
3.1b Sub-basin hydropower SEAs and CIAs undertaken as input to BDP		■	■	■
				Sub-basin SEAs
3.2 Scoping of potential for small hydropower undertaken			■	■
				Scoping Report
3.3a Barrier effects of mainstream dams to fish migration identified	■			
	Summary report published			
3.3b Guidance developed for mitigation measures for fish migration	■	■	■	■
			Ongoing guidance	
3.4 Standard specifications for navigation locks in mainstream dams	■			
	Final Report			
3.5 Multipurpose functionality of hydropower projects identified				■
				Final Report
4 Sustainability Assessment and Financing				
4.1a Financing mechanisms for sustainability measures for proposed mainstream dams identified			■	■
			Final Report	
4.1b Sustainability incentives within market and regulatory frameworks introduced			■	■
			Final Report	
4.1c Benefit-sharing mechanisms elaborated at regional, national and community levels			■	■
			Final Report	
4.2 "Environmental Considerations for Sustainable Hydropower Development" field-tested	■	■	■	■
				Final Report
4.3 Guidance provided on sustainable management of reservoir watersheds			■	■
				Guidelines

Annex 6 :
Initiative on Sustainable Hydropower
Estimated Budget 2008 - 2011

Amounts in US\$						
No.	Output	2008	2009	2010	2011	Total
1	Management and Communication					
1.1a	Regional and National Consultations Held and ISH Work Plan Formulated	308,000	54,000			361,000
1.1b	Initiative Managed Effectively		306,000	306,000	306,000	919,000
1.2a	Dialogue Facilitated: Ministerial Briefings, Dialogue with Developers and Financiers, Multi-Stakeholder Forum, Dialogue Partners	24,000	36,000	66,000	38,000	164,000
1.2b	Raised Awareness of Risks and Opportunities of Hydropower Development		120,000	11,000	5,000	137,000
1.2c	Improved Communication and Dissemination of Outputs		22,000	22,000	22,000	66,000
1.3	Technical Inputs Provided to PNPCA Process		378,000	337,000	200,000	915,000
				Total Component 1		2,562,000
2	Capacity Building and Knowledge Base Support					
2.1	Technical Assistance Provided to Hydropower Developers on Safeguards and Monitoring				66,000	66,000
2.2a	Expanded MRC Hydropower Knowledge Base		41,000	6,000		47,000
2.2b	Improved Access to Hydrometeorological and Operational Data of Hydropower Developers		22,000	15,000	3,000	40,000
2.3	Improved Environmental Baseline Information for Hydropower Planning	49,000	167,000	70,000		287,000
2.4	Capacity Building Provided to Line Agencies for Implementation of SEAs/CIAs, Environmental and Social Policy Implementation, and Monitoring of Hydropower Project Development			58,000	280,000	338,000
				Total Component 2		778,000
3	Regional Planning Support					
3.1a	Strategic Environmental Assessment (SEA) and Regional Macroeconomic Evaluation of Proposed Mainstream Dams in LMB		847,000	193,000		1,040,000
3.1b	Sub-Basin Hydropower SEAs and CIAs undertaken as Input to BDP			647,000	635,000	1,282,000
3.2	Scoping of Potential for Small-Scale Hydropower Undertaken			43,000		43,000
3.3a	Barrier Effects of Mainstream Dams to Fish Migration Identified	134,000				134,000
3.3b	Guidance Developed For Mitigation Measures for Fish Migration		246,000	160,000		406,000
3.4	Standard Specifications for Navigation Locks in Mainstream Dams	90,000				90,000
3.5	Multipurpose Functionality of Hydropower Projects Identified			24,000	109,000	133,000
				Total Component 3		3,143,000

4	Sustainability Assessment and Financing				
4.1a	Financing Mechanisms for Sustainability Measures for Proposed Mainstream Dams Identified	131,000			131,000
4.1b	Sustainability Incentives within Market and Regulatory Frameworks Introduced	10,000	118,000		127,000
4.1c	Benefit-Sharing Mechanisms Elaborated at Regional, National and Community Levels	158,000			158,000
4.2	"Environmental Considerations for Sustainable Hydropower Development" Field-Tested	96,000	130,000		226,000
4.3	Guidance Provided on Sustainable Management of Reservoir Watersheds	2,000	155,000		157,000
				Total Component 4	800,000
	Sub-Total 1				5,964,000
	Contingencies at 10%				596,000
	Sub-Total 2				6,560,000
	MRC Management and Administration Fee at 11%				722,000
	Total Estimated Budget (including Contingencies and MRC Management and Administration Fee)				7,282,000

**Initiative on Sustainable Hydropower
Estimated Budget 2008 – 2011**

Breakdown by Input

	Quantity	Rate	Amount
Personnel	780		4,707,600
MRCS / ISH Coordination Team	188.00	5,091	957,200
MRC Programme/Section inputs	142.71	10,300	1,469,875
NMC staff	194.00	1,095	212,400
Short-term international consultants	59.42	24,091	1,431,500
Short-term riparian consultants	149.00	4,000	596,000
Line agency staff on secondment	46.50	874	40,625
Official travel			150,000
National	87	200	17,400
Regional	222	300	66,600
International	22	3,000	66,000
Meetings and workshops			515,000
National meeting	12	5,000	60,000
Regional meeting	11	20,000	220,000
National workshop	30	2,500	75,000
Regional workshop	16	10,000	160,000
Training			160,000
In-country training	16	10,000	160,000
Training at MRCS / external institute			0
Equipment			10,000
Expendable			10,000
Non-expendable			0
Publications			121,000
Publications, media			61,000
Miscellaneous			60,000
Sub - contracts			300,000
Sub-contract 1 (Fish Larvae Survey)			180,000
Sub-contract 2 (Additional LMB studies for SEA)			80,000
Sub-contract 3 (Additional UMB studies for SEA)			40,000
Sub-total 1			5,963,600
Contingency @ 10.0%			596,360
Sub-total 2			6,559,960
MRC Secretariat support @ 11.0%			721,596
Total donor support			7,281,556
Total donor support (rounded)			7,282,000