

**MEKONG RIVER COMMISSION**

**AGRICULTURE, IRRIGATION AND FORESTRY  
PROGRAMME 2001-2005**

**October 2000**

**Annex**

**AIFP Individual Activity Proposals**

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**ABBREVIATIONS**

ADB            Asian Development Bank

AIFP	Agriculture, Irrigation and Forestry Programme
AIM	Agriculture and Irrigation Management
AIP	Agriculture and Irrigation Programme
BDP	Basin Development Planning
FAO	Food and Agriculture Organization
GIS	Geographical Information System
GPS	Global Positioning System
HRD	Human Resources Development
ICID	International Committee on Irrigation and Drainage
IWMI	International Water Management Institute
JC	Joint Committee
KRA	Key Result Area
M & E	Monitoring and Evaluation
MFI	Multilateral Finance Institution
MRB	Mekong River Basin
MRC	Mekong River Commission
MRCS	Mekong River Commission Secretariat
NIAPP	National Institute for Agriculture Planning and Projection
NMC	National Mekong Committee
PAR	Participatory Action Research
PIN	Project Identification Note
PTD	Participatory Technology Development
SIRAP	Sustainable Irrigated Agriculture Project
WUG	Water User Group
WUP	Water Utilization Programme

## **INTRODUCTION**

This Annex presents more details of the components outlined in the main report. The programme is presented herein as separate subcomponents for the convenience of readers interested only in particular subjects, hence some background is repeated in each subcomponent to place it in context with the Programme as a whole.

The activities include all of the subjects and regions of concern or interest to the Riparian states, as expressed in National Mekong Committee (NMC) meetings and the final regional workshop, on 1-2 October 2000. All activities have passed the criteria for selection agreed to in the framework described in Section 2.4 in the main report, and are considered achievable within the 5-year period 2001 - 2005.

## **The programme priority**

In practice it may not be possible to undertake all of the activities within the period or to address all of the regions of interest, due to resource or access constraints and for this reason the activities in each component are prioritised according to their importance in achieving the goal of AIFP. Consistent with a programme approach, an inception phase is proposed for each activity during which detailed planning by relevant stakeholders to be involved in implementation can be undertaken, based on the resources available and the agreed objectives to be addressed.

## **Coordination with other MRC Programmes**

A particular feature of the AIFP, as proposed, is the way in which it forms a part of the integrated MRC programme and its key strategic directions, the Water Utilisation Programme (WUP), the Basin Development Planning Process (BDP) and other subsidiary programmes including the Environment, Human Resource Development, Fisheries and Navigation Programme. Concrete evidence for this trend towards integrating MRC activities can be seen through the commitment of resources from other programmes to complement and augment the proposals with cost herein.

The Forestry Programme has incorporated its USD 4.9 million programme into the Agriculture and Irrigation Programme to ensure its watershed classification and management systems are utilised in land and water zoning and management, to become the Catchment Management Component. The Fisheries Programme has committed USD2.75 million to add fisheries activities to the Catchment Management Component out of recognition of the importance of integrating fisheries into the mainstream of planning for agriculture and irrigation. The Human Resource Development Programme has USD0.3 million available to augment the AIFP capacity building component out of recognition that Capacity Building for MRC requires an inter-disciplinary approach. The Technical Support Division is expecting further input of data in a form useful to the MRC Database and the services of AIFP in 'ground truthing' existing remote sensed data and additional data provided through other MRC activities. The form of cooperation between AIFP and the WUP and BDP are being developed as the precise needs of these programmes become clearer in the light of studies now in train.

## **COMPONENT A: WATER USE EFFICIENCY**

### **Sub-component No. 1: Water Use Efficiency in Paddy Irrigation System**

#### **1. Introduction**

This proposal results from requests from each National Mekong Committee made either during the first NMC meetings held in February-March 2000 and the second round of meetings held in May-June 2000. It also includes consideration of some project ideas already existing in the AIFP at January 2000. The process of selection is described in the "Summary and Recommendations on the Second National Mekong Committee Meetings May-June 2000", part of the working papers for AIFP. The formulated proposal was discussed during the regional workshop early in October 2000 and each country endorsed the activities and agreed to cooperate with other countries as proposed. The subcomponent addresses the efficiency of water use in the main irrigation systems in the Basin, which has been the main thrust of the Agriculture and Irrigation Programme since inception in 1996. It also addresses the means of assessing water use and implementing the rules for water utilisation being developed under WUP- at the water use level.

#### **2. Background**

##### ***2.1 Issues to be addressed***

The water and land resources of the Mekong River Basin (MRB) are the basis of its agriculture, providing food and employment to about 85% of the population of about 60 million inhabitants. It also provides the staple diet of perhaps 300 million people. The Basin has the potential to expand food production many times over in response to demand if its resources are managed in a sustainable and cooperative manner. While the timing and pace of change towards increased production is essentially unknowable, population and income trends indicate that world demand for food will continue to increase and change in composition. The World Water Forum conference in Amsterdam in March 2000 estimated that food demand from the MRB would increase by between 20% and 50% by 2030, with a corresponding increase in the demand for water.

Optimising water and associated input use (efficiency) can be addressed on a national basis but in the context of sharing potentially scarce resources, regional cooperation is required for desirable results. Cropping intensity in the irrigated parts of the Basin ranges from an average of about 1 crop per year in Cambodia to an average of almost 2 crops in the delta region in Vietnam (reaching 3 crops in some areas). The potential may be closer to 3 crops per year but any increase in response to the demand expected by the World Water Forum will result in much greater demand for water in the dry season when the river is low. Even a change in crop types requiring water at different times than present crops has the potential to increase water demand at low water times. Effective planning to allocate water between nations for such changes will require shared knowledge about the evolving socio-economic and agronomic conditions that are driving agricultural change in the Basin. Implementation of the rules will also require the evolution of effective links with and incentives for water users at the field level through water user groups (WUG) and other means. Wholehearted compliance with agreed water utilization rules will also be greatly influenced by an improving capacity to utilize the available water as efficiently as possible.

This vital food supply capability for the region is based on significant public investments in irrigation in some countries and much farmer investment in paddy development to utilize rainfall in all countries. It is commonly recognized by the Riparian states that the efficiency of use of the huge volumes of water involved is quite low and sometimes causes negative impacts to the environment. It is also recognized that knowledge about the actual efficiency and the extent of this damage is patchy, this is due to a variety of causes including:

- Poor management, particularly after water leave the main head works and between the system managers and the farmers.
- Unfinished secondary and tertiary systems.
- Inefficient input use (fertilizer and pesticides).
- Lack of attention to alternative crops and cropping patterns that may improve returns from water use.
- Lack of effective attention to environmental impacts such as salinity and acid drainage.

## **2.2 Past and ongoing work**

Water use efficiency has been part of the Agriculture and Irrigation programme since its inception, the significant projects have included, the *Mekong Irrigation Programme (1988-1992)* which focussed on pumping irrigation infrastructure and cropping intensity and the *Sustainable Irrigated Agriculture Project (SIRAP, 1992-1996)*, which focussed more on the institutional aspects of water management. Both projects were considered to have been successful on a limited scale in two countries (Lao PDR and Thailand) based on project reports and an inspection in 2000. The SIRAP project in particular is considered to have experience relevant to the activities proposed, particularly due to the need build better links with water users to understand water use and to implement the water utilisation rules being developed under WUP.

There have been other short-term studies and training programmes, particularly but not only in Thailand and Lao PDR that have contributed knowledge and capabilities that can be utilized in this sub- component. Specifically, *Improved Land and Water Use in Northern Thailand, (1992)*,

*Study on Integrated Land and Water Use for Sustainable Agricultural Development in the Lower Mekong Basin (1996), and Regional Training Programme on Modern Irrigation Technology and Extension.*

The AIM newsletter published in 1997 can be reactivated to provide a continuing forum for developments in water use efficiency.

### **3. Rationale for MRC Involvement**

The rationale for MRC involvement is that the development and implementation of useful water utilization rules (being developed through the WUP programme) requires common knowledge among the Riparian states about the socio-economic and agronomic imperatives driving water use in each country. It also requires a means of linking these rules to water users and a collaborative means of improving the efficiency of such use to maximize sustainable production, particularly in periods of low water.

### **4. Target Groups and Target Area**

**The target group** includes, directly, national staff in each country engaged in relevant research and, indirectly, agricultural water users in the Basin. Each country will nominate the specific research group or line agency to be involved in their country depending on the specific subject to be investigated.

**The target area** includes all of the main irrigation areas in the MRB although the focus of attention will be selected areas in each country that are representative of significant ecological zones consistent with the ecological units to be considered under the BDP and other Programmes. This selection will be made by participating research institutions or line agencies in each country and decided by MRC based on available funding and the significance of the area to the MRB as a whole. It is intended that at least one area will be selected in each Riparian State, this is to ensure collaboration of all although it is envisaged that each country will concentrate on the ecology that is most represented in their country.

There are significant differences between rice growing in heavily flooded areas, in delta areas and in predominantly pumping irrigation areas and it is intended to capture each of these systems within this activity. It is also intended to encourage cooperation with the observer nations of China and Myanmar.

### **5. Expected Benefits**

- Better shared knowledge about water use in different ecological zones and for different crops.
- Improved water use efficiency over time.
- Some tested methods of linking water utilisation rules being developed under the WUP with water users through incentives and other means.
- An improved collaborative capacity to investigate water use issues related to the allocation of water between the Riparian states.
- An improved collaborative capacity to investigate alternative crops and cropping patterns and to optimise input use in all irrigated crops, through Participatory Action Research (PAR) and Participatory Technology Development (PTD).
- An improved collaborative capacity to investigate the environmental impact of irrigated agriculture in different ecological zones.

### **6. Objectives and Strategy**

#### **6.1 The objective**

**The long-term goal** of this subcomponent is to build common knowledge about the efficiency of

use and potential use of MRB water resources available for irrigated agriculture and to influence water use at the field level. This goal has direct links to the MRC goals related to developing rules for sharing the water resources of the Basin through the Water Utilization Programme (WUP) and to MRC goals related to the development of a basin planning process (BDP).

It specifically relates to the MRC Strategic plan through:

- Key Result Area (KRA) 1, to promote sustainable natural resource management and development.
- KRA 2, to improve the technical capacity of line agencies in environmental management.
- KRA 3, to provide input to natural resources databases and information system.
- KRA 4, to evaluate previous programs and to initiate new projects in accordance with the MRC Strategic Plan.
- KRA 5, to improve the capacity of the MRC, including National Mekong Committees (NMC) and associated line agency staff to play a leading role in coordinating the Basin's water related activities.

**The specific objective** of this component is to facilitate collaborative applied research into methods for improving the use of MRB water resources in agriculture, principally through irrigation. It covers both paddy and related dry land agriculture and takes a broad view of factors that influence water use efficiency. It includes such aspects as water user group systems (building on previous work of the AIFP in Thailand and Lao PDR) water delivery systems, alternative crops and cropping patterns and efficient fertilizer and other chemical input use.

## **6.2 The strategy**

The strategy is to facilitate collaborative learning between line agencies and research institutions in the 4 Riparian States in areas of interest to each country, where these contribute to improving water use efficiency and sharing in the Basin as a whole.

The strategy includes linking with other national and bilateral programs through the participating line agencies or research institutes and to collaborate with other projects and agencies with related objectives to maximize the communication of results between the Riparian states.

## **7. Outputs, Achievement Indicators, Milestones and Activities**

### **7.1 Outputs and achievement indicators**

- A network of researchers in the 4 countries working collaboratively and with international partners on water use efficiency and sharing in the Basin.
- Forecast models of water use and water quality under different relevant cropping patterns and management systems by significant ecological zone.
- Officially accept water use data and models from significant ecological zones from each Riparian State, and make available to each state and to agreed users.

### **7.2 Key milestones**

- An inception report within 6 months of start up identifying the cooperating institutions, other relevant activities and collaborators and a detailed working plan of investigations and experiments in each country together with a plan for researcher exchange between countries.
- Draft water use forecast models for each investigated ecological zone within 2 years of start-up.
- Annual digitised reports of official data collected, in cooperation with the Technical Support Division as mutually agreed with other units of MRC and member countries.
- A final report containing results of investigations, updated models and officially recognized and digitised data at the end of 5 years including and ongoing update plan.

### 7.3 Activities

The activities listed below are a combination of Project Information Note (PIN) requests from the 4 countries where the common interest is investigating water use efficiency and the means of implementing the rules for water utilisation in a collaborative way. The activities for each country suggested below and the combination of PIN ideas have been accepted as a basis for cooperation between each country in the regional workshop in October 2000.

The activities in a suggested order of priority include:

- Identify line agencies or research institutes in each State with the appropriate capacity to undertake the agreed applied research tasks from a short list proposed by each country.
- Identify pilot areas in each country that are typical of significant ecological zones in each country and describe the water use characteristics in technical and management terms.
- Identify other related activities in each country and establish working links and complementary programmes and develop links with external institutions such as the International Committee on Irrigation and Drainage (ICID) and the International Water Management Institute (IWMI).
- Develop a forecast model of the variation of water flow and quality under different relevant cropping patterns and water use systems investigated including a model of water pumping from the main stream between Lao PDR and Thailand.
- Investigate links and incentives to influence water use at the field level to comply with the rules for water utilization being developed under the WUP.
- Document, digitise and share the data obtained in cooperation with the MRC Technical Support Division and assist with 'ground truthing' of MRC remote sensing activities by this unit and data requirements of the WUP, BDP and Environment Programme as mutually agreed.
- Undertake investigations into negative environmental impacts including salinity build-up, acid drainage, erosion and nutrient/pesticide runoff.
- Undertake experiments, with farmers and interested private sector self-funded participants, into different technical and management systems through PAR & PTD that are expected to lead to improved efficiency including input use optimisation and alternative crops and cropping patterns.
- Facilitate the development of plans to modernize these and other systems to seek funding.

### 8. Inputs and Cost Estimate

**The inputs** proposed will be the subject of detailed planning at inception but are anticipated to include:

- A set of scientific equipment, GPS data loggers, digitising equipment and scanners, transport and office equipment relevant to each country's agreed programme.
- Contract research and data collection fees for Riparian line agency or research institutions.
- Technical assistance in experimental design, data acquisition, monitoring and evaluation linked to an international research institution or institutions.
- Discretionary materials and operating costs including international and in-country travel for 5 years for the agreed programmes in each country.
- Funds to attend conferences or other international technical exchange.

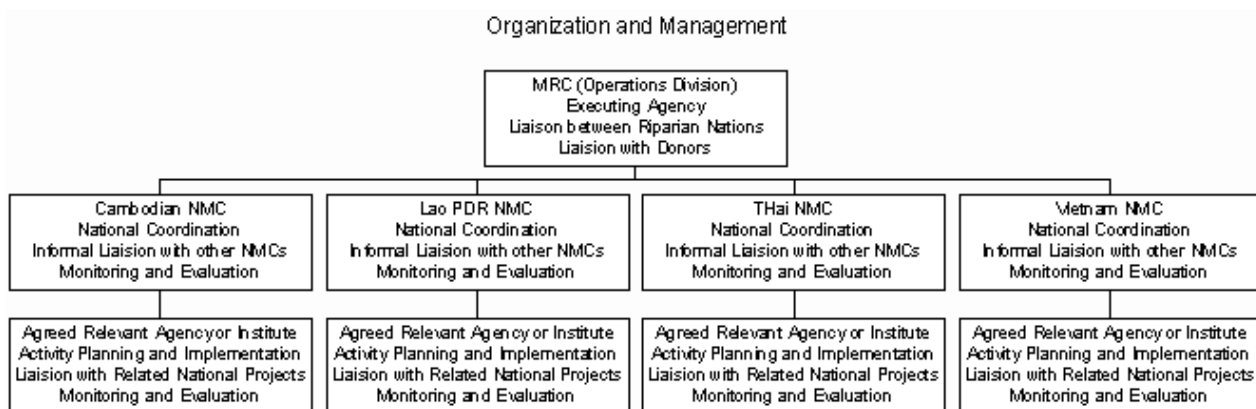
**The cost estimate** for this sub-component is:

Cost Item	Year 1	Year 2	Year 3	Year 4	Year 5	Total
Equipment	120,000	80,000	40,000	-	-	
Contract Research	220,000	440,000	440,000	440,000	450,000	

Technical Assistance	160,000	160,000	100,000	100,000	140,000	
Materials and Operating Costs	40,000	80,000	80,000	80,000	80,000	
International Technical Exchange	20,000	20,000	20,000	20,000	20,000	
Contingency 10%	56,000	78,000	68,000	64,000	69,000	
Secretariat Support Costs	67,760	94,380	82,280	77,440	83,490	
<b>Total (USD)</b>						

## 9. Organization and Management

- The project executed and coordinated with other programmes of MRC by the MRC Operations Division and NMC coordination and liaison offices in each Riparian State.
- The activities being planned and implemented by relevant national line agencies or research institutions in each country as agreed.
- Monitoring and evaluation being planned and undertaken by the MRC as discussed below using standard procedures detailed below.



## 10. Monitoring and Evaluation

Monitoring and evaluation under this subcomponent would be formulated in detail at inception but would allow for monitoring for three broad purposes:

### ***Monitoring for donors or cooperating agencies***

Each agency and member country has its own requirements for monitoring and evaluation. The AIFP would facilitate M & E for cooperating agencies as agreed in the documents covering the cooperation. This would be the responsibility of the Public Information and Coordination Unit.

### ***Monitoring for AIFP programme management***

Monitoring and evaluation would be a fundamental tool for AIFP programme management within the Operations Division. Responsive M & E is a term used for a system of monitoring that seeks to improve transparency and accountability between stakeholders. This would be achieved by including an M & E agreement in all operational plans. Under these agreements the stakeholders responsible for providing inputs to the activity under the operational plan would agree to meet periodically to assess progress, to challenge the assumptions underlying the activities, to bring up and resolve all 'claims' about each other's performance. All 'concerns' about the activity and any 'issues' that cannot be resolved and so need to be taken up to higher authorities. This is likely to include an annual M & E meeting at each Riparian State research station or site with attendance from MRCS, each NMC and selected researchers from each



institution.

The proceedings and resolutions of meetings would be taken and the minutes kept for inspection by line agencies, NMCs and MRC staff. One duty under each agreement would be that a representative from one meeting must personally present unresolved issues to the next level of programme management. If not resolved at that level it would become the responsibility of a member of that meeting to present the issue higher, and so on until resolution.

### ***Benefit monitoring for MRC***

Benefit monitoring under AIFP would be according to the logic of the Activity Logframe for each research project in each country developed during inception. This would be undertaken by the Natural Resources Development Planning Division to contribute to long term planning within MRC.

## **Sub-component No. 2: Water Use Efficiency in Upland Agriculture**

### **1. Introduction**

This proposal results from requests from each National Mekong Committee made either during the first NMC meetings held in February-March 2000 and the second round of meetings held in May-June 2000. It also includes consideration of some project ideas already existing in the AIP at January 2000. The process of selection is described in the "Summary and Recommendations on the Second National Mekong Committee Meetings May-June 2000", part of the working papers for AIFP. The activities have been discussed and endorsed for cooperation between the States at the Regional Workshop in October 2000.

The activities address the efficiency of water use in upland agriculture, particularly areas that might use pumped irrigation water in sloping areas, either from rivers, lakes, reservoirs or groundwater but also highland agriculture where present practices are leading to erosion or other negative impacts in other parts of the Basin. It has been separated from lowland agriculture as much of the land is in quite different areas geographically and the associated research involves different skills and often, different institutions. However some Riparian states may combine these subcomponents to suit their institutional purposes.

### **2. Background**

#### ***2.1 Issues to be addressed***

The water and land resources of the Mekong River Basin (MRB) are the basis of its agriculture, providing food and employment to about 85% of the population of about 60 million inhabitants. It also provides the staple diet of perhaps 300 million people. The Basin has the potential to expand food production many times over in response to demand if its resources are managed in a sustainable and cooperative manner. While the timing and pace of change towards increased production is essentially unknowable, population and income trends indicate that world demand for food will continue to increase and change in composition. The World Water Forum conference in Amsterdam in March 2000 estimated that food demand from the MRB would increase by between 20 and 50% by 2030, with a corresponding increase in the demand for water.

Optimising water and associated input use (efficiency) can be addressed on a national basis but in the context of sharing potentially scarce resources, regional cooperation is required for desirable results. Changes in market demand is already driving changes in cropping patterns in upland areas and high water use crops such as coffee are already placing stress on groundwater supplies in some cross border areas. Effective planning to allocate water between

nations for such changes will require shared knowledge about the evolving socio-economic and agronomic conditions that are driving agricultural change in the Basin and a means of relating to water users to influence water use decisions in compliance with the rules being developed under the WUP. Whole hearted compliance with agreed water utilization rules will also be greatly influenced by common efforts and knowledge of the efforts each are making to utilize the available water as efficiently as possible.

Although the lowlands constitute the main 'food bowl' of the MRB they are often linked to agriculture in the uplands as negative impacts from upland agriculture in the form of erosion, floods, chemical pollutants and ground water depletion often fall on lowland agriculture. As most water for irrigation in upland agriculture needs to be pumped there is also a particular need to study water storage and handling technologies and management systems in the different ecological and market zones to identify the most economical and environmentally appropriate solutions from among those available within the Basin and from international sources, private and public.

Although upland agriculture in the form of traditional 'swidden' systems undertaken by semi-settled or shifting cultivators has a long history in the region, attention to more commercial cropping in upland areas is of more recent origin. Furthermore, although rain-fed commercial cropping is possible in many areas, some supplementary irrigation is considered necessary in most commercial situations because of the heat in dry times. It is recognized by the Riparian States that irrigation development in uplands is now quite limited and that efficiency is quite low and the potential for damaging environmental impacts from in-appropriate practice to be quite high. This is due to a variety of causes including:

- Limited experience with upland irrigation and upland commercial crops.
- Limited international technology specifically adapted to tropical conditions.
- Limited knowledge of modern water reservoir storage systems.
- Poor practice with regard to limiting floods, erosion and pollutant runoff resulting from upland agriculture.
- Poorly developed links between markets and production resulting in inadequate market signals to upland agriculturalists.

## **2.2 Past and ongoing work**

Water use efficiency has been part of the Agriculture and Irrigation programme since its inception, the significant projects have included, the *Mekong Irrigation Program (1988-1992)* which focussed on pumping irrigation infrastructure and cropping intensity and the *Sustainable Irrigated Agriculture Project (SIRAP, 1992-1996)*, which focussed more on the institutional aspects of water management. The water user group (WUG) processes developed under these projects will have relevance to this project, particularly with reference to influencing water use at the field level to comply with the rules being developed under the WUP.

Other past studies and training activities considered to have relevance include *Feasibility study on the Ya Soup Multi-purpose Project in Vietnam (1996)*, *Study on Integrated Land and Water Use for Sustainable Agricultural Development in the Lower Mekong Basin (1996)* and the *Regional Training Programme on Modern Irrigation Technology and Extension (1997)*.

The AIM newsletter published in 1997 is could be reactivated to provide a continuing forum for developments in upland water use efficiency.

## **3. Rationale for MRC Involvement**

The rationale for MRC involvement is that the development and maintenance of useful water utilization rules (being developed through the WUP programme) requires common knowledge among the Riparian states about the socio-economic and agronomic imperatives driving water use in each country, in upland as well as lowland areas. It also requires a collaborative means of

improving the efficiency of such use to maximize sustainable production of valued products using available water, particularly in periods of low water, to provide an additional incentive to refine and follow the rules generated.

#### 4. Target Groups and Target Area

**The target group** includes, directly, national staff in each country engaged in relevant research and, indirectly, upland agricultural water users in the Basin. Each country will nominate the specific research group for their country that relates specifically to upland agriculture.

**The target area** includes the main mid-slope areas in the MRB where commercial agriculture is technically and economically feasible although the focus of attention will be selected areas in each country that are representative of significant ecological zones. It will also include highland areas where present practices are contributing to damaging erosion or other environmental impact on other areas in the Basin that require investigation. This selection will be made by participating research institutions in each country and decided by project management based on available funding and significance of the area to the MRB as a whole. It is intended that at least one area will be selected in each Riparian State, this is to ensure collaboration of all although it is envisaged that each country will concentrate on the ecological zone that is most represented in their country.

There are significant differences between upland agriculture to be recognised in this selection, for example:

- Areas utilized for field crops and having rich deep soils.
- Areas with developed markets for fruit tree crops with indifferent soils.
- Shifting agricultural areas with erosion or other undesirable impacts off site.
- Industrial tree crop areas.

A preliminary suggestion has mentioned the Srepok Basin in Vietnam, Vang Vieng in Lao PDR, the Se San basin in Cambodia and Nakhon Ratchasima in Thailand. It is intended to capture each of the important systems within this project. It is also intended to encourage cooperation with the observer nations of China and Myanmar.

#### 5. Expected Benefits

- Better shared knowledge about water use in different upland agricultural regions and for different crops.
- Improved water storage, pumping and irrigation use efficiency over time.
- An improved understanding of the sustainable use of groundwater in irrigated agriculture.
- An improved collaborative capacity to investigate water use and water sharing issues related to the allocation of water between the Riparian states.
- An improved collaborative capacity to investigate alternative crops and cropping patterns and to optimise input use in all irrigated crops.
- An improved collaborative capacity to investigate the environmental impact of upland agriculture in different ecological zones.

#### 6. Objectives and Strategy

##### 6.1 The objective

**The long-term goal** of the subcomponent is to build common knowledge about the efficiency of use and potential use and sharing of MRB water resources in upland agriculture. This goal has direct links to the MRC goals related to developing rules for sharing the water resources of the Basin through the Water Utilization Programme (WUP) and to MRC goals related to the development of a Basin Planning Process (BDP).

It specifically relates to the MRC Strategic plan through:

- Key Result Area (KRA) 1, to promote sustainable natural resource management and development.
- KRA 2, to improve the technical capacity of line agencies in environmental management.
- KRA 3, to provide input to natural resources databases and information system.
- KRA 4, to evaluate previous programs and to initiate new projects in accordance with the MRC Strategic Plan.
- KRA 5, to improve the capacity of the MRC, including National Mekong Committees (NMC) and associated line agency staff to play a leading role in coordinating the Basin's water related activities.

**The specific objective** of the Sub component is to facilitate collaborative applied research into methods for improving the use and sharing of MRB water resources in upland agriculture. It covers both irrigated and related rain fed agriculture and takes a broad view of factors that influence water use efficiency. It includes such aspects as water user group systems (building on previous work of the AIP in Thailand and Lao PDR) water storage and delivery systems, alternative crops and cropping patterns and efficient fertilizer and other chemical input use.

## **6.2 The strategy**

The strategy is to facilitate collaborative learning between line agencies or research institutions in the 4 Riparian States in areas of interest to each country, where these contribute to improving water use efficiency and sharing in the Basin as a whole.

The strategy includes linking with other national and bilateral programs through the participating research institutes and to actively look for opportunities for collaboration in specific projects with related objectives to maximize the communication of results between the Riparian states.

## **7. Outputs, Achievement Indicators, Milestones and Activities**

### **7.1 Outputs and achievement indicators**

- A network of researchers in the 4 countries working collaboratively on water use efficiency in upland agriculture in the Basin.
- Forecast models of water use and water quality under different relevant cropping patterns and management systems by significant ecological zones.
- A set of field scale experiments that demonstrate some new technologies in water storage and delivery for tropical upland areas and flat areas away from major pump-able water resources.
- Officially accepted water use data and models by significant ecological zones from each Riparian State, made available to each state and to agreed users.

### **7.2 Key milestones**

- An inception report within 6 months of start up identifying the cooperating institutions, other relevant activities and collaborators and a detailed working plan of investigations and experiments in each country together with a plan for researcher exchange between countries.
- Draft water use forecast models for each investigated ecological zone within 2 years of start-up.
- Annual digitised reports of official data collected, in cooperation with the Technical Support Division as mutually agreed with other units of MRC and member countries.
- A final report containing results of investigations, updated models and officially recognized and digitised data at the end of 5 years including an ongoing up dateable plan.

### **7.3 Activities**

The activities listed below are a combination of Project Information Note (PIN) requests from the 4 countries where the common interest is investigating water use efficiency in a collaborative way in upland areas. The activities for each country are suggested below but these and the combination of PIN ideas are subject to confirmation by each country in the regional workshop proposed for August 2000.

The activities proposed under this sub-component will be vital in allocating water for agriculture in the seasonal low river period and recognizes that cropping patterns are changing with changing demands for food in urban areas and that this in turn will have impacts on water use and the timing of water demand. It recognizes that water use efficiency in upland agriculture needs to be considered broadly to include water delivery and storage systems, land use practices (particularly those that might lead to erosion) and optimal input use for maximum sustainable output.

There is a need, identified by the Riparian States, to collaboratively investigate water and soil use in upland agriculture in its broad sense to include: delivery and storage systems, water user management systems, land use practices, input optimisation, alternative cropping patterns and to do this in a range of significant ecological zones. The States see this as a significant contribution to the ongoing WUP, BDP and Environment programs within MRC.

The proposed activities in suggested order of priority include:

- Identify line agencies or research institutions with the appropriate capability to undertake agreed applied research activities, from a short list provided by each country.
- Identify pilot areas in each country that are typical of significant ecological zones and describe the agricultural and water use characteristics in technical and management terms.
- Identify other related activities in each country and establish working links and complementary programmes.
- Develop a forecast model of the variation of water flow and quality under different relevant cropping patterns and water use systems investigated.
- Undertake investigations into negative environmental impacts including, drainage, floods, erosion and nutrient/pesticide runoff.
- Undertake experiments, with farmers and interested private sector self-funded participants, into different technical and management systems that are expected to lead to improved water storage and use efficiency including input use optimisation and alternative crops and cropping patterns through PAR & PTD.
- Document, digitise and share the data obtained in cooperation with the MRC Technical Support Division and assist with 'ground truthing' of MRC remote sensing activities by this unit and data requirements of the WUP, BDP and Environment programmes as mutually agreed.
- Facilitate the development of plans for new upland agriculture projects to seek funding.

## 8. Inputs and Cost Estimate

**The inputs** proposed will be the subject of detailed planning at inception but are anticipated to include:

- A set of scientific equipment, GPS data loggers, digitising equipment and scanners, transport and office equipment relevant to each country's agreed programme.
- A set of construction equipment for water storage and delivery systems experiments in the Great Lake Region of Cambodia.
- Contract research and data collection fees for Riparian research institutions.
- Technical assistance in experimental design, data acquisition and monitoring and evaluation linked to an international research institution or institutions.
- Discretionary materials and operating costs including international and in-country travel for 5 years for the agreed programmes in each country.

- Funds to attend conferences or other international technical exchange.

**The cost estimate** includes an allowance for travel to distant upland areas and internationally to assess new technical developments. It also includes an allowance for costly equipment for water delivery and storage trials, particularly in field water storage delivery in the Cambodian Great Lake region and to adapt modern upland irrigation systems to tropical conditions. The cost estimate (preliminary) of this project is:

Cost Item	Year 1	Year 2	Year 3	Year 4	Year 5	Total
Equipment	240,000	200,000	40,000	-	-	
Contract Research	240,000	430,000	430,000	430,000	430,000	
Technical Assistance	200,000	200,000	200,000	100,000	100,000	
Materials and Operating Costs	80,000	160,000	160,000	160,000	160,000	
International Technical Exchange	40,000	40,000	40,000	40,000	40,000	
Contingency 10%	80,000	103,000	87,000	73,000	73,000	
Secretariat Support Costs	96,800	124,630	105,270	88,330	88,330	
<b>Total (USD)</b>						

## 9. Organization and Management

- The sub-component executed and coordinated with other programmes of MRC by the MRC Operations Division and NMC coordination and liaison offices in each Riparian State.
- The activities being planned and implemented by relevant line agencies on national research institutions as agreed with each country.
- Monitoring and evaluation being planned and undertaken by the MRC using standard procedures detailed below.



## 10. Monitoring and Evaluation

Monitoring and evaluation (M & E) under this sub-component would be formulated in detail at inception but would allow for monitoring for three broad purposes.

### **Monitoring for donors or cooperating agencies**

Each agency and member country has its own requirements for monitoring and evaluation. The AIFP would facilitate M & E for cooperating agencies as agreed in the documents covering the

co-operation. This would be the responsibility of the Public Information and co-ordination Section.

### ***Monitoring for AIFP programme management***

Monitoring and evaluation would be a fundamental tool for AIFP programme management within the Operations Division. Responsive M & E is a term used for a system of monitoring that seeks to improve transparency and accountability between stakeholders, by including an M & E agreement in all operational plans. Under this agreement the stakeholders responsible for providing inputs to the activity under the operational plan would agree to meet periodically to assess progress, to challenge the assumptions underlying the activity, to bring up and resolve all 'claims' about each other's performance. All 'concerns' about the activity and any 'issues' that cannot be resolved and so need to be taken up to higher authorities. This is likely to include an annual M & E meeting at each Riparian State research station or site with attendance from MRCS, each NMC and selected researchers from each institution.

The proceedings and resolutions of meetings would be taken minutes and the minutes kept for inspection by line agencies, NMCs and MRC Secretariat staff. One duty under each agreement would be that a representative from one meeting must personally present unresolved issues to the next level of programme management. If not resolved at that level it would become the responsibility of a member of that meeting to present the issue higher, and so on until resolution.

### ***Benefit monitoring for MRC***

Benefit monitoring under AIFP would be according to the logic of the Activity Logframe for each research project in each country developed during inception. It is likely the Basin Planning Process would include input from programme monitoring and AIFP would cooperate with this. This would be undertaken by the Natural Resources Development Planning Division to contribute to long term planning within MRC.

## **Sub-component No. 3: Land and Water Resources Inventory**

### **1. Introduction**

This proposal results from a review of project documents and discussions in the MRC Secretariat. The ideas were mentioned in the second round of NMC meetings held in May-June 2000 and endorsed by each country in the regional workshop in October 2000. The activity addresses the need to build a more accurate picture of the land and water resources of the MRB that is recorded in common units and available to each of the riparian countries and to the MRC Secretariat to facilitate the development of the basin planning process (BDP) and to assist some states develop land use zone maps where unbalanced land use would impact on other countries.

### **2. Background**

#### ***2.1 Issues to be addressed***

The water and land resources of the Mekong River Basin (MRB) are the basis of its agriculture and forestry, providing food and employment to about 85% of the population of about 60 million inhabitants. It also provides the staple diet of perhaps 300 million people. The Basin has the potential to expand food production many times over in response to demand if its resources are managed in a sustainable and cooperative manner. While the timing and pace of change towards increased production is essentially unknowable, population and income trends indicate that world demand for food will continue to increase and change in composition. The World Water Forum conference in Amsterdam in March 2000 estimated that food demand from the

MRB would increase by between 20 and 50% by 2030, with a corresponding increase in the demand for water.

Optimising water and associated input use (efficiency) can be addressed on a national basis but in the context of sharing potentially scarce resources, regional cooperation is required for desirable results. Effective planning to allocate water and related resources between nations will require shared knowledge about the soils and water resources, much of this information exists in many of the Riparian States but at present the data are of mixed quality and in non-standard units and not mapped in common mapping units.

The MRC mission includes developing basin plans for sustainable agricultural and forestry development and, for useful collaborative planning to occur, commonly acceptable data are essential. MRC has already undertaken a project to compile an inventory of soils and water within the Basin from available data resources, to map these and to digitise the results for basin planning purposes. Experience during the project has been that much of the soils data is based on soil tests undertaken with different analytical techniques in different countries and that the positioning of sample points on soil maps has been of variable accuracy. This subcomponent is required to undertake some more intensive sampling and to 'ground truth' the projections made under the earlier project to improve the reliability of the results for planning purposes. Two of the Riparian States, Cambodia and Lao PDR, have requested MRC assistance to develop land use zoning maps to facilitate the process of allocating land between competing interests, particularly, but not only, between agriculture and forests. Undertaking such zoning on a rational basis is important for the Basin as a whole, particularly allocations between forestry and agriculture due to the vital role of forestry in regulating the speed and quality of water runoff for agriculture.

It is commonly recognized by the Riparian states that present knowledge about soils and water resources is mixed across the Basin and not in standardized units and that this knowledge is vital for collaborative planning (learning) about the agronomic systems on which the food production of the Basin are based. This is due to a variety of reasons including:

- Different historical backgrounds resulting in different data and analytical standards between the states.
- Long periods in some states in which systematic survey has been impossible.
- Significant changes in land use (particularly in forestry) in most states since original mapping was undertaken.
- Lack of resources in some states for individual mapping and lack of resources in all states for collaborative mapping and to standardize units and analytical processes.

## **2.2 Past and ongoing work**

Data collection between the states has always been part of MRC's scope of activities and, as mentioned above, the *Land Resources Inventory for Agricultural Development (1997-2000)* has been an important contribution to this activity within MRC and AIP in particular. In this sub-component it is proposed to associate land resources with data on water resources as a further aid to collaborative basin planning.

## **3. Rationale for MRC Involvement**

The rationale for MRC involvement is that the basin development planning process (being developed through the BDP programme) requires common knowledge among the Riparian states about the basic soil and water conditions in each country. It also requires a collaborative means of improving the accuracy of such use data to maximize the usefulness of the basin development planning process over time. Discussions with major development funding bodies such as the ADB suggests that lending decisions on major works that have potential impact on the whole Basin would be made much simpler if regional natural resource management plans, agreed between the states, were available into which framework the major developments could be placed. MRC has both the mission and the operational procedures to undertake such



regional planning on behalf of the Riparian States.

#### 4. Target Groups and Target Area

**The target group** includes, directly, national staff in each country engaged in natural resources including agricultural and forestry within the Basin. Indirectly the target group is the farmers, fisher people and foresters in the Basin and the urban people who depend on their products. Each country will nominate the specific line agency or research group to undertake the inventory for their country.

**The target area** includes all of the MRB although the focus of attention will be selected areas in each country that are currently economically and or environmentally significant and representative of significant ecological zones. This selection will be made by the nominated participating research institutions in each country and decided by project management based on available funding and the significance of the area to the MRB as a whole. It is also intended to encourage cooperation with the observer nations of China and Myanmar.

#### 5. Expected Benefits

- Better shared knowledge about the soil and water resources in different ecological zones for use in the basin planning process (BDP).
- A system for progressively improving the quality and reach of such data as required by the Riparian States over time.
- An improved collaborative capacity to undertake and agree on regional natural resource plans as a basis for borrowing development funds from the multilateral financing institutions (MFI) such as the ADB.
- An improved capacity to prepare resource use zoning maps to facilitate rational use of resources in the interests of the long term sustainability of the Basin.
- An improved collaborative capacity to monitor the environmental impact of agricultural and forestry related land use in different ecological zones in the Basin.

#### 6. Objectives and Strategy

##### 6.1 The objective

**The long-term goal** of this subcomponent is to build common knowledge about the soil resources of the MRB and to link this to knowledge about water resources to enable better planning to utilize these soils. This goal has direct links to the MRC goal related to the development of a basin planning process (BDP).

It specifically relates to the MRC Strategic plan through:

- Key Result Area (KRA) 1, to promote sustainable natural resource management and development.
- KRA 2, to improve the technical capacity of line agencies in environmental management.
- KRA 3, to provide input to natural resources databases and information system.
- KRA 4, to evaluate previous programs and to initiate new projects in accordance with the MRC Strategic Plan.
- KRA 5, to improve the capacity of the MRC, including National Mekong Committees (NMC) and associated line agency staff to play a leading role in the (BDP).

**The specific objective** of this sub-component is to facilitate collaborative applied research into soils and water mapping and to build on the progress made in the earlier project.

##### 6.2 The strategy

The strategy is to facilitate collaborative learning between research institutions in the 4 Riparian

States about the soils in ecological zones of interest to each country where these contribute to preparing development plans and monitoring the results.

The strategy includes linking with other national and bilateral programs through the participating research institutes and to maximize the communication of data between the Riparian states.

## **7. Outputs, Achievement Indicators, Milestones and Activities**

### **7.1 Outputs and achievements**

- Tested soil and water resource maps for the Basin at the scale achieved in phase 1.
- Tested soil and water maps at a more detailed scale for areas selected and agreed on at inception.
- A draft land use zoning map for both Cambodia and Lao PDR.

### **7.2 Key milestones**

- Agreement on standard analytical tests for soil analysis in the 4 countries and agreement on a field survey schedule, within 3 months of start up of Phase 2 of the project.
- A draft land use zone map for Cambodia within 2 years of start up for that activity.
- A draft land use zone map for Lao PDR within 2 years of start up for that activity.
- Final proposed land use zone maps for the above activities within one more year.
- Completion of agreed soils and water inventory maps for the agreed areas by the end of the project.

### **7.3 Activities**

The activities proposed for this sub-component result from some 6 PIN ideas from NMCs that can be grouped together and can be satisfied by a continuation of the activities of the previous project undertaken by the MRC Technical Support Division. This project, the Land Resources Inventory for Agricultural Development, had as its objective to gather, standardize and share data on soil resources in the Basin and to digitise and locate the information on the MRC Geographical Information System (GIS) to facilitate monitoring and further survey work. The Riparian States see this particular group of activities as contributing to the WUP, BDP and Environment Programme of MRC.

In part, the activities build on progress achieved under the earlier project, they provide resources to solving problems experienced with that project and they respond to requests listed in the 6 PIN ideas put forward by the NMCs. The activities include:

- Agree on standard analytical techniques for soil analysis between the 4 States.
- Extend field work to 'ground truth' mapping work already undertaken by MRC and take spectral signatures of the geo-units sampled and log these with a GPS data logger for calibration with other maps of the Technical Support Division.
- Assist the Technical Support Division to organize agricultural soils related data for publishing on the MRC website.
- Propose draft land use classifications for Cambodia and assist in preparing land use zone maps for the Cambodian government, with particular regard to the watershed of the Great Lake.
- Assist the government of Lao PDR with similar activities in Lao PDR.

## **8. Inputs and Cost Estimates**

*The Inputs* for this subcomponent are proposed to include:

- Technical assistance and equipment to enable contracted research institutes to complete

phase 2 of the land and water resources inventory project.

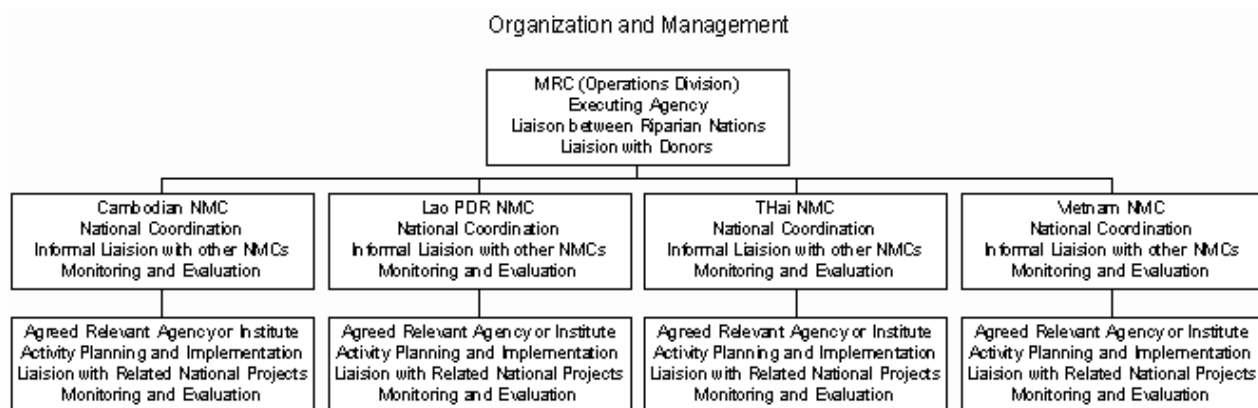
- Technical assistance and equipment to enable contracted research institutes to produce the draft land use zone maps for each of Cambodia and Lao PDR.

**The cost estimate** is provisionally:

Cost Item	Year 1	Year 2	Year 3	Year 4	Year 5	Total
Land and water resources inventory	450,000	430,000	420,000	400,000	400,000	
Draft land use zone map for Cambodia	-	250,000	250,000	250,000	250,000	
Draft land use zone map for Lao PDR	-	-	250,000	250,000	250,000	
Contingency 10%	45,000	68,000	92,000	90,000	90,000	
MRC support costs	54,450	82,280	111,320	108,900	108,900	
<b>Total (USD)</b>						

## 9. Organization and Management

- The project executed and coordinated with other programmes of MRC by the MRC Operations Division and NMC coordination and liaison offices in each Riparian State.
- The activities being planned and implemented by relevant line agencies or national research institutions as agreed with each country.
- Monitoring and evaluation being planned and undertaken by the MRC using standard procedures detailed below.



## 10. Monitoring and Evaluation

Monitoring and evaluation under this subcomponent would be formulated in detail at inception but would allow for monitoring for three broad purposes:

### **Monitoring for donors or cooperating agencies**

Each agency and member country has its own requirements for monitoring and evaluation. The AIFP would facilitate M & E for cooperating agencies as agreed in the documents covering the cooperation. This would be the responsibility of the Public Information and Coordination Unit.

### **Monitoring for AIFP programme management**

Monitoring and evaluation would be a fundamental tool for AIFP programme management within the Operations Division. Responsive M & E is a term used for a system of monitoring that seeks to improve transparency and accountability between stakeholders. This would be achieved by including an M & E agreement in all operational plans. Under these agreements the stakeholders responsible for providing inputs to the activity under the operational plan would agree to meet periodically to assess progress, to challenge the assumptions underlying each activity, to bring up and resolve all 'claims' about each other's performance. All 'concerns' about the activity and any 'issues' that cannot be resolved and so need to be taken up to higher authorities. This is likely to include an annual M & E meeting at each Riparian State research station or site with attendance from MRCS, each NMC and selected researchers from each institution.

The proceedings and resolutions of meetings would be taken minutes and the minutes kept for inspection by line agencies, NMCs and MRC Secretariat staff. One duty under each agreement would be that a representative from one meeting must personally present unresolved issues to the next level of programme management. If not resolved at that level it would become the responsibility of a member of that meeting to present the issue higher, and so on until resolution.

### ***Benefit monitoring for MRC***

Benefit monitoring under AIFP would be according to the logic of the Activity Logframe for each research project in each country developed during inception. This would be undertaken by the Natural Resources Development Planning Division to contribute to long term planning within MRC.

## **Sub-component No. 4: Modelling the Multi-functionality of Rice Farming**

### **1. Introduction**

This proposal results from an idea generated in the MRC Secretariat. The idea was mentioned in the second round of NMC meetings held in May-June 2000 and endorsed for cooperation in the regional workshop in October 2000. The project addresses the need to build a more accurate picture of the different functions played by rice farming on the environment to facilitate the development of the basin planning process (BDP) and environmental monitoring.

### **2. Background**

#### ***2.1 Issues to be addressed***

The water and land resources of the Mekong River Basin (MRB) are the basis of its agriculture, providing food and employment to about 85% of the population of about 60 million inhabitants. It also provides the staple diet of perhaps 300 million people. The Basin has the potential to expand food production many times over in response to demand if its resources are managed in a sustainable and cooperative manner. While the timing and pace of change towards increased production is essentially unknowable, population and income trends indicate that world demand for food will continue to increase and change in composition. The World Water Forum conference in Amsterdam in March 2000 estimated that food demand from the MRB would increase by between 20 and 50% by 2030, with a corresponding increase in the demand for water.

The major food crop of the Basin is rice and the major impact of agricultural practice on the environment comes from irrigated rice production. These impacts have both positive and negative aspects and both need to be understood clearly in planning for new developments for rice production and in optimising the impact of existing rice production. At the present time no commonly accepted models exist within MRC or in any similar institution that describe water use

in rice farming and its impact on groundwater, river stream flow and climate for the important ecological zones in the basin. This means that the value of the different functions of a rice field in the environment is not acknowledged. It also means that the models, upon which development planning and the formulation, and maintenance of water utilization rules for agriculture are to be based, are not adequately informed.

It is commonly recognized by the Riparian states that rice production involves a major re-engineering of the landscape and the functionality of this change to the landscape has not been investigated, at least sufficiently for the purposes of collaborative planning and communication of its environmental benefits to development agencies who might be contemplating funding further development or redevelopment of large irrigated rice projects. This is due to a variety of reasons including:

- Paddy rice production has a very long history in the region and there has not been a previous need to describe its functionality to justify development.
- Interest in the environmental impact of agricultural activities originated in temperate zones and for temperate crops and little original work in this regard is known in the tropical zone.
- There has been a lack of resources and technology to address this need within the MRB.

## **2.2 Past and ongoing work**

Data collection between the states has always been part of MRC's scope of activities although no work of this nature has been undertaken by MRC in the past. There are a number of sources of crop water use data but these are not calibrated to specific zones, do not show environmental effects for the MRB and are too general for these purposes. Furthermore they may not be accepted by each MRC nation as authoritative for their circumstances. These sources are, however a good starting point and may be 'clients' for the more detailed data to emerge from this project.

## **3. Rationale for MRC Involvement**

The rationale for MRC involvement is that the basin development planning process (being developed through the BDP programme) requires common knowledge between the Riparian states about the environmental impact of agriculture in the region, specifically with regard to this sub-component, the multi functionality of its major agricultural crop. It also requires a collaborative means of improving the accuracy of such use data to maximize its usefulness to the basin development planning process over time. MRC has both the mission and the operational procedures to undertake such research on behalf of the Riparian States.

## **4. Target Groups and Target Area**

**The target group** includes, directly, national staff in each country engaged in rice and environmental research within the Basin. Indirectly the target group is the farmers in the Basin and the urban people who depend on rice production, particularly future increases in production to meet expected demand. Each country will nominate a short list of research groups or line agencies to undertake the research for their country.

**The target area** includes all of the MRB major rice growing areas although the focus of attention will be selected areas in each country representative of significant ecological zones. This selection will be made by the nominated participating research institutions in each country and decided by project management based on available funding and significance of the area to the MRB as a whole. It is also intended to encourage cooperation with the observer nations of China and Myanmar.

## **5. Expected Benefits**

- An improved understanding of the multi-functionality of rice farming under irrigation.

- Improved data for estimating water use in irrigation in the major rice growing regions in the Basin.
- Improved data as a basis for monitoring of irrigation in the Basin.

## 6. Objectives and Strategy

### 6.1 The objective

**The long-term goal** of this sub-component is to build common knowledge about the functionality of rice farming in the MRB and the use of water in irrigated agriculture.

It specifically relates to the MRC Strategic plan through:

- Key Result Area (KRA) 1, to promote sustainable natural resource management and development.
- KRA 2, to improve the technical capacity of line agencies in environmental management.
- KRA 3, to provide input to natural resources databases and information system.
- KRA 4, to evaluate previous programs and to initiate new projects in accordance with the MRC Strategic Plan.
- KRA 5, to improve the capacity of the MRC, including National Mekong Committees (NMC) and associated line agency staff to play a leading role in the (BDP).

**The specific objective** of this sub-component is to provide a means by which MRC and member nations can measure and work to improve the multi-functionality of irrigated rice farming in different ecological zones in the MRB.

### 6.2 The strategy

The strategy is to facilitate collaborative learning between research institutions in the 4 Riparian States about the multi-functionality of rice farming in each country. The strategy includes linking with other national and bilateral programs through the participating research institutes and to maximize the communication of data between the Riparian states.

## 7. Outputs, Achievement Indicators, Milestones and Activities

### 7.1 Outputs and achievement indicators

**The immediate outputs** (Phase I, 3 years) will be:

- Information, in the form of model water balance databases, of each significant paddy ecological zone in the MRB, useful for the WUP, BDP, for the Web dissemination as agreed between NMCs and MRC.
- Better planning tools in the form of more exact water use 'crop factors' for paddy crops in different ecological zones in the Basin.
- Calibration or 'ground truthing' of remote sensed images of the region, by gathering the 'spectral signatures' of each zone modelled to assist in monitoring of water use and environmental impacts/contributions.
- A useful description of the 'multi-functionality' of irrigated rice farming in the environment of the MRB.

**The medium and long-term outputs** (Phase II, 3-10 years) will be:

- A greatly improved basis for cooperative water use planning between MRC nations.
- A better model of the impact of cropping pattern changes in paddy fields on water use and the environmental for use in basin planning.
- A basis for modelling changes in water flow to improve efficiency of paddy field

management.

## **7.2 Key milestones**

- Agreement on the cooperating research institutions in each country, prior to inception.
- Agreement on the model to be used as a basis for the project, within 2 months of inception.
- A draft model of the environmental impact of rice farming within two years of start up of that activity.
- A refined model of the environmental impact of the rice farming within three years of start up of the project.

## **7.3 Activities**

The activities proposed for this sub-component result from discussions within MRC Secretariat, the idea has been communicated to NMCs during the second NMC meetings. The activities were discussed and guidance given during the regional workshop in October 2000, in which agreement was reached between the States to cooperate in this activity.

The subcomponent is to be undertaken in three phases, two of which would form the basis of a project that has been proposed to a particular donor. The first phase would be a data search or reconstruction among national research institutes, relevant international research institutes with the cooperation of WUP and BDP and each NMC and the specific activities are suggested to include:

- The selection of an appropriate research institute in each country from a short list provided by each NMC.
- Undertaking a data and literature search among relevant national and international research institutes to facilitate planning for the modelling task.
- The selection of a mathematical model type that will provide a satisfactory basis for describing the functionality of rice farming.
- The setting up of a modelling task force with representatives from each State.

The activities of the second phase would be proposed as a result of the first phase. In general, the second phase would involve defining data gaps in collaboration with WUP, the environment programme and the establishment of field measurement programs with cooperating farmers in a 'typical' region in each significant paddy ecological zone to obtain information from:

- A non-irrigated paddy model.
- A 'normal' irrigated paddy situation.
- An 'intensive' situation to simulate a more developed situation.

The models will describe and model rice farming crop water use and impacts/contributions on infiltration to groundwater, stability of river stream flows, flood control, land conservation and impact on bio-diversity and ambient temperature. A spectral signature of each type of field modelled will be taken with a hand held scanner for use in referencing the results to geo-units in the MRC database and on satellite images. Other data would also be gathered on manufactured chemical input and effluent and 'natural' salts or acid output associated with the trial plots.

The third phase would be long-term monitoring to be undertaken as a 'core activity' by MRC to maintain and evolve the database in collaboration with each nation.

## **8. Inputs and Cost Estimates**

**The Inputs** for this subcomponent are proposed to include:

- Technical assistance and equipment to enable contracted research institutes to undertake the modelling task and associated field measurements.
- Staff required will be one part time senior researcher for 3 years and 16 person years of time for local researchers and translators between each nation.
- Equipment for each nation will include transport, water and other measurement equipment, GPS equipped data loggers, scanners, computers, and digitising software
- Some civil works to establish field stations.

The subsequent monitoring and maintenance of the database (not part of this request for support) would be funded as a core function of MRC, estimated to cost USD 200,000 per annum with national contributions of 25%.

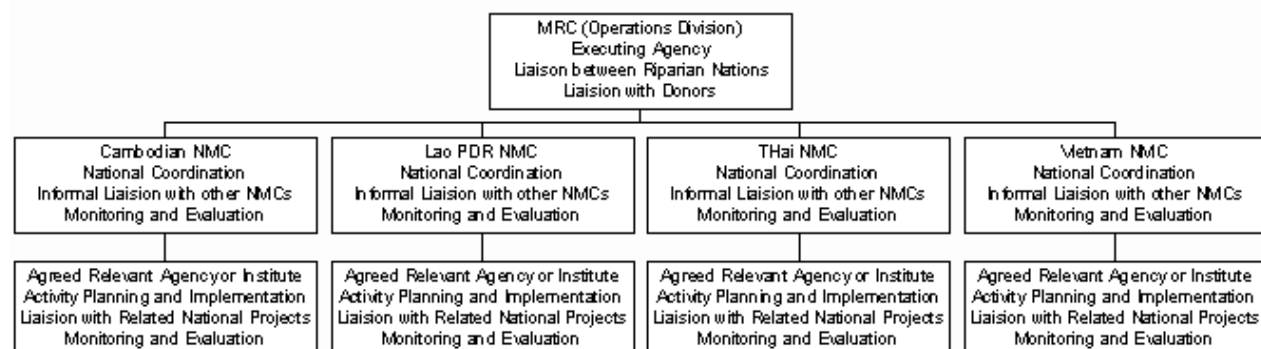
The actual cost will depend on the availability of data from existing institutions in each country and this is unknown at present and until a data search can be completed. The costs are provisionally estimated to be (all three phases):

Cost Item	Year 1	Year 2	Year 3	Year 4	Year 5	Total
International consultant	120,000	100,000	60,000	60,000	60,000	
Supplementary staff	19,400	20,000	20,000	20,000	20,000	
Sub-contracts for research	100,000	140,000	180,000	180,000	180,000	
Equipment & materials	36,000	30,000	30,000	30,000	30,000	
Operation & management	28,000	20,000	20,000	20,000	20,000	
Travel and communication	20,000	10,000	10,000	10,000	10,000	
Report & media costs (GIS)	20,000	20,000	20,000	20,000	20,000	
Contingency 10%	34,340	34,000	34,000	34,000	34,000	
MRC Support Costs	41,551	41,140	41,140	41,140	41,140	
<b>Total (USD)</b>						

## 9. Organization and Management

- The project executed and coordinated with other programmes of MRC by the MRC Operations Division and NMC coordination and liaison offices in each Riparian State.
- The activities being planned and implemented by relevant national research institutions or line agencies in each country.
- Monitoring and evaluation being planned and undertaken by the MRC using standard procedures detailed below.

### Organization and Management





## **10. Monitoring and Evaluation**

Monitoring and evaluation under this subcomponent would be formulated in detail at inception but would allow for monitoring for three broad purposes:

### ***Monitoring for donors or cooperating agencies***

Each agency and member country has its own requirements for monitoring and evaluation. The AIFP would facilitate M & E for cooperating agencies as agreed in the documents covering the cooperation. This would be the responsibility of the Public Information and Coordination Unit.

### ***Monitoring for AIFP programme management***

Monitoring and evaluation would be a fundamental tool for AIFP programme management within the Operations Division. Responsive M & E is a term used for a system of monitoring that seeks to improve transparency and accountability between stakeholders. This would be achieved by including an M & E agreement in all operational plans. Under these agreements the stakeholders responsible for providing inputs to the activity under the operational plan would agree to meet periodically to assess progress, to challenge the assumptions underlying each activity, to bring up and resolve all 'claims' about each other's performance. All 'concerns' about the activity and any 'issues' that cannot be resolved and so need to be taken up to higher authorities. This is likely to include an annual M & E meeting at each Riparian State research station or site with attendance from MRC Secretariat, each NMC and selected researchers from each institution.

The proceedings and resolutions of meetings would be taken minutes and the minutes kept for inspection by line agencies, NMCs and MRC Secretariat staff. One duty under each agreement would be that a representative from one meeting must personally present unresolved issues to the next level of programme management. If not resolved at that level it would become the responsibility of a member of that meeting to present the issue higher, and so on until resolution.

### ***Benefit monitoring for MRC***

Benefit monitoring under AIP would be according to the logic of the Activity Logframe for each research project in each country developed during inception. This would be undertaken by the Natural Resources Development Planning Division to contribute to long term planning within MRC.

## **COMPONENT B: CATCHMENT MANAGEMENT**

### **Sub-component No. 5: Catchment Management**

#### **1. Introduction**

This proposal results from requests from each National Mekong Committee made either during the first NMC meetings held in February-March 2000 or the second round of meetings held in May-June 2000. It also includes consideration of some project ideas already existing in the AIP at January 2000. The process of selection is described in the "Summary and Recommendations on the Second National Mekong Committee Meetings May-June 2000", part of the working papers for AIFP. The proposal was discussed at the regional workshop in October 2000 and each country agreed to cooperate with other countries as proposed. The subcomponent addresses the need to plan and manage 'fragile' sub-basins in a more interdisciplinary, 'holistic'

way, particularly in cross border areas where there are institutional barriers to coordinated planning and in catchments that potentially have significant impacts on the Basin as a whole.

## 2. Background

### 2.1 Issues to be addressed

The water and land resources of the Mekong River Basin (MRB) are the basis of its agriculture and forestry, providing food and employment to about 85% of the population of about 60 million inhabitants. It also provides the staple diet of perhaps 300 million people. The Basin has the potential to expand food and forest production many times over in response to demand if its resources are managed in a sustainable and cooperative manner. While the timing and pace of change towards increased production is essentially unknowable, population and income trends indicate that world demand for food will continue to increase and change in composition. The World Water Forum conference in Amsterdam in March 2000 estimated that food demand from the MRB would increase by between 20 and 50% by 2030, with a corresponding increase in the demand for water.

MRC's mission is to enable *sustainable* development to meet such demands. The Food and Agriculture Organization (FAO), has defined sustainable agriculture and rural development as: "*The management and conservation of the natural resource base, and the orientation of technological and institutional change in such a manner as to ensure the attainment and continued satisfaction of human needs for present and future generations*".

Sustainable management of the MRB for agriculture must take into account the agricultural use of water in 'fragile' sub-catchments and the role of forests in contributing to this sustainability. Serious damage to the system as a whole will likely begin in such areas (has begun in some areas) in the form of erosion and floods from faster runoff. In the context of planning for long-term sustainability, agriculture and forests need to be understood as integrated land-use activities where activities in the upper catchment impact on those lower down where most irrigation occurs and where irrigation practices in the valleys affect the activities in the upper catchment. It is vital to take into account the activities and aspirations of local government and people living in these areas, mostly farmers, by involving them in catchment management planning if sustainable land use practices are to result. This is particularly so of ethnic minorities and other poverty stricken groups whose role (and beliefs) in natural resource management are often ignored.

While irrigated agriculture and forests are often seen on a macro-scale as separate and different activities, the importance to MRC of the goal of *sustainability* sets aside the aspect of local land management and looks at the functionality of the system as a whole. This in turn requires attention at local levels as these impacts across the Basin from the upper catchment to the valley bottoms originate at the sub-basin level where the fragility of the landscape can intensify the impact of local land management mistakes onto the Basin as a whole.

This is particularly hard to address in border areas where there are institutional constraints to cooperative planning and management and in areas where there are significant investments in public works (such as power generation).

There are often institutional constraints to interdisciplinary planning that pose threats to the environment as a whole. It is recognized by the Riparian States that the capacity to manage integrated development in isolated cross border areas and in some fragile basins with major infrastructure developments requires an interdisciplinary approach and at present is quite limited. This is due to a variety of reasons including:

- Institutional constraints to cross border cooperation for natural resource and agricultural planning and monitoring at local levels.
- Limited access to the results of applied research and practical international experience in

the management of fragile catchments by people and officials in these areas.

- Limited means to adapt and apply known technical answers to environmental issues such as erosion, declining fertility, floods and pollution flows in isolated regions.
- Limited means to address poverty alleviation and food security in an integrated way in isolated regions and regions with significant shifting ethnic minorities.
- Limited understanding of traditional socio-cultural customs and beliefs related to resource management.
- Poorly developed links between markets and production resulting in inadequate market signals to upland agriculturalists.

## **2.2 Past and ongoing work**

Catchment management has not been an important part of the Agriculture and Irrigation Programme (AIP) in the past although it has undertaken some relevant planning work under the heading of "multi-purpose projects" notably the *Feasibility study on the Ya Soup Multi-purpose Project in Vietnam (1996)*, and to some extent the *Study on Integrated Land and Water Use for Sustainable Agricultural Development in the Lower Mekong Basin (1996)*. However agriculture and irrigation are components of catchment management in the valley bottoms of many cross border and fragile sub-basins. In this context MRC has undertaken relevant projects such as the *Mekong Irrigation Program (1988-1992)* which focussed on pumping irrigation infrastructure and cropping intensity and the *Sustainable Irrigated Agriculture Project (SIRAP, 1992-1996)*, which focused more on the institutional aspects of water management. The water user group (WUG) processes developed under these projects will have some relevance to this catchment management project.

The AIM newsletter published in 1997 can be reactivated to provide a forum for integrated catchment management planning for cross border and fragile sub-basins.

## **2. Rationale for MRC Involvement**

The rationale for MRC involvement is that its mission and authorized scope of work, based on the 1995 MRC agreement, provides the Riparian States with the means of tackling difficult land, water and forest resource use issues in isolated border and mountain areas where poverty is often an important cause of environmental stress. It builds on the very valuable work undertaken by the MRC forestry programme in classifying fragile watersheds, many of which are situated in cross border areas. It will also permit attention to ethnic minority development issues in a coordinated way, which is particularly difficult in trans-border areas as these people commonly cross borders in the ordinary course of shifting cultivation and trade. (Ethnic minority people are often associated, correctly or incorrectly, with land degradation in their search for food security).

The Riparian States see such action as a valuable contribution of experience and data for the BDP process being developed at a more macro-level between the States through MRC. Importantly they also see this component as a means of addressing poverty alleviation, food security and environmental protection in cross border and isolated fragile regions that are not easily assisted by more mainstream development agencies.

## **3. Target Groups and Target Area**

**The target group** includes government officials charged with administering these isolated areas and the often poverty stricken people who inhabit the areas. It also includes national and private sector investors in energy, transport corridors, forestry, agro-forestry and people engaged in processing and marketing where these may cause impacts on the rural community who, in turn, may cause impacts on the investments through irrational resource use. In particular the target group will include ethnic minorities and other poverty stricken groups in fragile catchments.

**The target areas** identified by the riparian countries in this approximate order of priority include:

- The Dien Bien/Moung Mai border area between Vietnam and Lao PDR. This activity will address poverty alleviation and food security through upper watershed erosion control among ethnic minorities, bank stability and flood control, irrigation modernization, crop diversification and fishery development in valley bottoms and lower slopes.
- The Se San/Srepok river basin between Cambodia and Vietnam. This activity will facilitate community based planning for balanced resource use between forestry, agriculture, fisheries and energy generation to facilitate an optimal sustainable resource use result for each country and will pay particular attention to poverty alleviation and food security among the inhabitants including the significant ethnic minorities in the area. Planning will consider socio-cultural traditions of ethnic minority in forest, fish and other resource management.
- The Se Bang Hieng river basin (Quang Tri/Savanahket border region) between Vietnam and Lao PDR. This activity will address poverty alleviation and food security among the ethnic and other people living in the area with the view of funding small agricultural, irrigation and forest activities that will enhance balanced resource use. A particular study will be made on the impact of rapid development of Asian Highway 9 on ethnic minorities in the area.
- The Theun Hinboun hydro-scheme area in Lao PDR. This activity will focus on developing agricultural irrigation and fisheries uses for damaging water outflow from this scheme, as an adjunct to and a more sustainable resolution of a resource allocation difficulty than the compensation measures being implemented.
- The Tonle Sap Great Lake region and/or the Strung Pursat region of Cambodia in particular. This activity will focus on integrated catchment management planning to promote balanced resource use, particularly between forests, agriculture and fisheries to safeguard the integrity of the Lake in the MRB as a whole.

It is noted that it may not be possible to begin in all of these regions in the short term.

#### 4. Expected Benefits

- Greater awareness of trans-border, across sub-basin and inter-sectoral impacts from agricultural activities in the Basin.
- Improved resource use planning and reduced environmental damage over time, particularly in trans-border and ecologically fragile areas.
- Improved capacity to promote sustainable forest management through market and other means.
- Improved communication and monitoring of resource use (for example forests and forest products) between local government in sensitive trans-border areas.
- More development in sensitive border areas where lack of ability to allocate water or other resources has prevented economic development, particularly in isolated mountain areas occupied by ethnic minorities and other disadvantaged groups.
- Reduced negative impacts and enhanced more equitable benefits from resource use in trans-border and fragile sub-basin areas.
- Improved knowledge about the links between secure forestland use rights and sustainability.

#### 5. Objectives and Strategy

##### 5.1 The objective

**The long-term goal** of this subcomponent is to build common knowledge between the Riparian States about the complex socio-economic and ecological links between forests, water and agriculture and to be able to facilitate more 'holistic' and cross-sectoral approaches to managing the resource between the states, to ensuring continued 'health' of the Basin.

It specifically relates to the MRC Strategic Plan through:

- Key Result Area (KRA) 1, to promote sustainable natural resource management and development.
- KRA 2, to improve the technical capacity of line agencies in environmental management.
- KRA 3, to provide input to natural resources databases and information system.
- KRA 4, to evaluate previous programs and to initiate new projects in accordance with the MRC Strategic Plan.
- KRA 5, to improve the capacity of the MRC, including National Mekong Committees (NMC) and associated line agency staff to play a leading role in coordinating the Basin's water related activities.

**The specific objective** of this subcomponent is to institutionalise a process of catchment management planning in selected MRB cross border areas and where resource use in one domain (For example, energy generation) is creating stress for other users of a sub-basin, e.g., farmers. Other examples include the impact of intensive agriculture on fisher-people and shifting cultivators on downstream agriculture or forests. In particular it will provide a means of addressing poverty alleviation and food security in regions where this is now very difficult, the lack of which poses a threat to land (soil), water and forest resources in the specific areas and other downstream areas.

Catchment management planning is an interdisciplinary activity that provides a rational basis for optimising the use of the resources of a catchment for the local community, the particular nation and the Basin as a whole. It involves consideration of forestry, fisheries, local services and ethnic minorities. It recognizes that:

- The central role of the rural community both as a cause of environmental stress and as an injured party where damage is occurring or would occur as a result of irrational planning.
- Social pressures facing small communities are often passed onto the environment through unsustainable farming practices and magnify as they progress.
- Where the exploitation of resources is causing environmental problems there is often an agricultural solution that will minimize and even benefit the rural community in ways that simple compensation will not.
- Planning undertaken in isolation from potentially impacted communities will, even when well planned, be susceptible to misunderstanding and difficulty in implementation to the cost of the resource project and the communities impacted.

## **5.2 The strategy**

The strategy is to facilitate collaborative planning (learning) for actual development or amelioration activities in sensitive cross border areas and other areas where the interests of the Basin as a whole are impacted or potentially impacted by lack of an institutional capacity to undertake such interdisciplinary planning and action. To focus local attention on real planning situations the component will be associated with a small community grant scheme, able to be employed under agreed conditions to implement necessary small and medium scale action. It will also develop links not currently available, with other small grant schemes and development lending institutions such as ADB, to facilitate other support and borrowing for development in areas where cooperation is needed.

## **6. Outputs, Achievement Indicators, Milestones and Activities**

### **6.1 Outputs and achievement indicators**

- An institutional capacity to undertake trans-border and inter-sectoral planning and catchment management in some trans-border and environmentally sensitive areas. The capacity will be available progressively during the first 5 year period of funding, in later phases it can be called upon in the post programme period as mutually agreed.
- An improved database of natural, human (including ethnic minority and other resources) in fragile areas available for macro-planning such as that to be undertaken under BDP.

- A capacity to monitor resource use in the area including forests and forest products.
- An improved capacity to mobilize funds at a local level for economic development and environmental protection activities, particularly in isolated trans-border and mountainous areas.
- Improved relations between investors in resource projects and the many farming communities that exist in the Basin.
- A report on the impact of rapid development of Asian Highway 9 on the rural population in the area.
- A report "Review of Forest Land Ownership and Forest Land Allocation Procedures".

## 6.2 Key milestones

- The establishment of practical agreements, between relevant stakeholders, to cooperate in each particular trans-border and other fragile area, including permission for programme officers to enter the areas and cross borders, within three months of start up in each area.
- The establishment of staffed and equipped office facilities in each particular area within 6 months of agreement under the milestone above.
- The holding of the agreed schedule of catchment planning meetings and the recording of these meetings and resolutions, including monitoring and evaluation processes, as agreed in management plans and funding contracts.
- The completion of a draft sub-basin watershed/catchment management plan within one year of the establishment of adequate office facilities.
- The completion of an annual updated management plan each year that funding is provided.
- Completion of funding requests and operational plans as periodically mutually agreed.
- The production of reports or data as agreed at inception.

## 6.3 Activities

The activities listed below are a combination of Project Information Note (PIN) requests from the 4 countries to form a cohesive catchment management process that will be commonly understood and can be implemented similarly in each country and trans-border area. The activities have been discussed and endorsed in the regional workshop in October 2000. In particular the concerned States have agreed to cooperate in specific trans-border and fragile areas listed above under *target group*. It is expected that activities may be slow to start in some regions of particular sensitivity or security risk. The activities of the proposed Small Community Grants Scheme to be associated with this component are discussed in a separate subcomponent. The activities specific to the Forestry Programme are from the Programme approved by the MRC Joint Committee in the past.

The activities proposed under the subcomponent relate specifically to catchment management planning, which will often include planning for specific investments to be funded by the Small Community Grants Scheme or other small grant schemes or lending institutions such as the ADB or the private sector where appropriate for a specific outcome. The activities in approximate order of priority proposed include:

- Establishment of trans-border or trans sub- basin local government resource planning committees with transport, communications and office facilities, as on-going institutions, staffed by line departmental and local government staff and other stakeholders including facilitators from MRC or NMCs and any relevant private sector participants (see organization and management below).
- The scheduling of an agreed programme of trans-border planning meetings including permission for facilitators and other foreign nationals to attend and cross borders for these purposes initially for a 5 year period.
- The undertaking of study tours and exchanges with other catchment management groups within the Basin (such as in Thailand) or internationally to build understanding of catchment management planning processes.

- Establishment of digitised maps showing sub-basin agriculture, forests, fisheries, natural species resources and services, including development activities planned by others from MRC, local and other sources by desk study and field investigations.
- The formulation of catchment management plans that take into account the views and plans of all relevant stakeholders, the ecology of the region, and the communication of these to stakeholders.
- Facilitating community and other stakeholder formulation of specific funding requests to the Small Community Grant Scheme, other small grant schemes, donors, lenders or private investors as appropriate.
- The establishment of a capacity to monitor resource use and trade in the area (including forests and forest products).
- The implementation of a responsive monitoring and evaluation programme in accordance with the requirements of funding bodies and to enable the evolution of the management plan in response to experience in the Basin (see also monitoring and evaluation below).
- A study of land, water and forest use rights.

## 7. Inputs and Cost Estimate

*The inputs* for this sub-component will be related to the pace at which catchment management groups can be formed in the identified trans-border and fragile areas. This in turn will depend upon issues such as security, national priorities and funding available for both this component and the proposed Small Community Grants Scheme. It will also depend on periodic requirements of Riparian States to formulate trans-border environmental management plans for intended significant resource developments in particular sub-basins. The inputs listed below have been estimated on the basis of being able to set up 3 trans-border or fragile zone sub-basin watershed management groups over the five years of the plan period. The cost of specific management plans associated with large infrastructure projects has not been estimated below. It is envisaged such studies would utilize the established catchment management offices as a 'base' for such special purpose plans and be funded separately. The inputs can be summarised as:

- A provincial liaison office in each border province staffed by a catchment management provincial field officer equipped with basic office equipment and transport.
- A district sub-basin planning office in the most relevant border or fragile zone, staffed with a district facilitator and support staff in an office, relevant equipment, transport, including a 4x4 pickup, a van and motor cycles to facilitate the anticipated work in particular sub-basin.

*The cost estimate* for this Project, on a very preliminary basis is as following table:

## 8. Organization and Management

The organization and management of this subcomponent, and the proposed Small Community Grants Scheme, intended to see most expenditure occur at Provincial and District officer levels in trans-border and fragile zones with facilitation from National Mekong Committees, guidance of national planning authorities and with overall coordination through the MRC Operations Division in Phnom Penh. It is proposed that each Riparian state would utilise staff of their line agencies from planning and interdisciplinary service units (such as the National Institute of Agricultural Planning and Projection (NIAPP) in Vietnam) to provide specialist staff for these offices on a suitable contractual basis. It is recognised that institutional arrangements will vary in each State to suit local requirements.

The use of international consultants would be reserved for more complex studies (particularly with catchment management studies associated with large infrastructure projects such as energy generation, which are not costed herein), in service training, and for monitoring and evaluation. This policy may need to be reviewed during the first two years of the operation of this sub-component.

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Cost Item	Year 1	Year 2	Year 3	Year 4	Year 5	Total
Provincial liaison offices equipments sets	40,000	-	40,000	-	40,000	
District field office sets	80,000	-	80,000	-	80,000	
Provincial office facilitator & support staff	80,000	80,000	160,000	160,000	240,000	
District field office facilitator & support staff	120,000	120,000	240,000	240,000	360,000	
Study tours to relevant sub-basin management groups	50,000	50,000	100,000	100,000	150,000	
Study security of resource use rights	400,000	300,000	-	-	-	
Promote sustainable forest management	-	-	250,000	250,000	-	
Eco-system improvement	200,000	200,000	200,000	200,000	200,000	
Operational costs	50,000	50,000	100,000	100,000	150,000	
Contingency 10%	102,000	80,000	117,000	105,000	122,000	
Secretariat Support Costs	123,420	96,800	141,570	127,050	147,620	
<b>Total (USD)</b>						

## 9. Monitoring and Evaluation

Monitoring and evaluation under this subcomponent would be formulated in detail at inception but would allow for monitoring for three broad purposes.

### *Monitoring for donors or cooperating agencies*

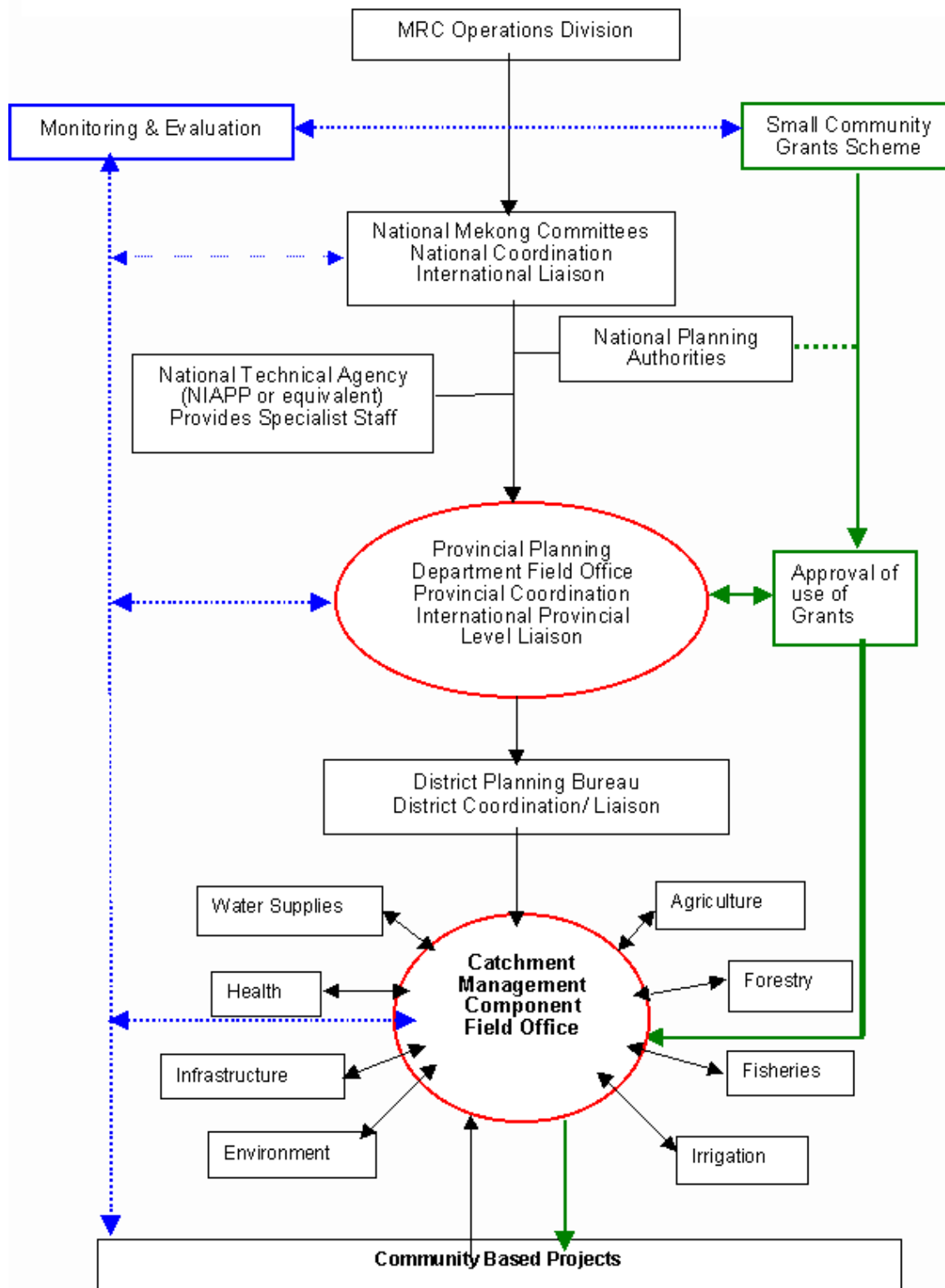
Each agency and member country has its own requirements for monitoring and evaluation. The AIFP would facilitate M & E for cooperating agencies as agreed in the documents covering the cooperation. This would be the responsibility of the Public Information and Coordination Unit.

### *Monitoring for AIFP programme management*

Monitoring and evaluation would be a fundamental tool for AIFP programme management within the Operations Division. Responsive M & E is a term used for a system of monitoring that seeks to improve transparency and accountability between stakeholders. This would be achieved by including an M & E agreement in all operational plans. Under these agreements the stakeholders responsible for providing inputs to the activity under the operational plan would agree to meet periodically to assess progress, to challenge the assumptions underlying each activity, to bring up and resolve all 'claims' about each other's performance.



**Figure 2 Functional relationships in organisation and management.**



Note: Institutional arrangements will vary between riparian countries to suit local practice

All 'concerns' about the activity and any 'issues' that cannot be resolved and so need to be taken up to higher authorities. This is likely to include an annual M & E meeting at each Riparian State research station or site with attendance from MRCS, each NMC and selected researchers from each institution.

The proceedings and resolutions of meetings would be taken minutes and the minutes kept for inspection by line agencies, NMCs and MRC Secretariat staff. One duty under each agreement

would be that a representative from one meeting must personally present unresolved issues to the next level of programme management. If not resolved at that level it would become the responsibility of a member of that meeting to present the issue higher, and so on until resolution.

### ***Benefit monitoring for MRC***

Benefit monitoring under AIFP would be according to the logic of the Activity Logframe for each research project in each country developed during inception. This would be undertaken by the Natural Resources Development Planning Division to contribute to long term planning within MRC.

## **Sub-component No. 6: Small Community Grants Scheme**

### **1. Introduction**

This proposal results from an idea generated by MRC Secretariat and discussed with each NMC in the second round of NMC meetings. The proposed fund addresses the need to provide a real incentive for catchment planning and management in 'fragile' sub-basins in a more interdisciplinary, 'holistic' way, particularly in cross-border areas where there are institutional barriers to coordinated planning and in catchments that potentially have significant impacts on the Basin as a whole.

### **2. Background**

#### ***2.1 Issues to be addressed***

The water and land resources of the Mekong River Basin (MRB) are the basis of its agriculture, providing food and employment to about 85% of the population of about 60 million inhabitants. It also provides the staple diet of perhaps 300 million people. The Basin has the potential to expand food production many times over in response to demand if its resources are managed in a sustainable and cooperative manner. While the timing and pace of change towards increased production is essentially unknowable, population and income trends indicate that world demand for food will continue to increase and change in composition. The World Water Forum conference in Amsterdam in March 2000 estimated that food demand from the MRB would increase by between 20 and 50% by 2030, with a corresponding increase in the demand for water.

MRC's mission is to enable *sustainable* development to meet such demands. The Food and Agriculture Organization (FAO), has defined sustainable agriculture and rural development as: "*The management and conservation of the natural resource base, and the orientation of technological and institutional change in such a manner as to ensure the attainment and continued satisfaction of human needs for present and future generations*".

While irrigated agriculture and forests are often seen on a macro-scale as separate and different activities, the importance to MRC of the goal of *sustainability* sets aside the aspect of local land management and looks at the functionality of the system as a whole. This in turn requires attention at some local levels as these impacts across the Basin from the upper catchment to the valley bottoms, also occur at the sub-basin level where the fragility of the landscape can intensify the impact of local land management mistakes onto the Basin as a whole. Attention to catchment management planning also requires involvement with the local people who may need to adopt different land management practices. The experience of local people and local officials with planning varies across the Basin but even where local planning occurs it often does not result in concrete action and there is a need to provide a direct incentive for more appropriate land management practices. The need for rational catchment management planning exists where institutional constraints to interdisciplinary planning pose threats to the environment as a

whole.

It is recognized by the Riparian States that the capacity to fund integrated development in isolated cross-border areas and in some fragile basins with major infrastructure developments requiring an interdisciplinary approach is now quite limited. This is due to a variety of reasons including:

- The high delivery cost of resources per family, due the low population density.
- The institutional difficulties operating at local level in isolated cross-border areas.
- Limited means to address poverty in an integrated way in isolated regions and regions with significant shifting ethnic minorities.
- Poorly developed links between markets and production resulting in inadequate market signals to upland agriculturalists.

## **2.2 Past and ongoing work**

There has not been an equivalent Grant Scheme within MRC or associated with the AIP in the past, although it has undertaken some relevant planning work for proposed bilateral projects notably the *Feasibility Study on the Ya Soup Multi-purpose Project in Vietnam (1996)*.

Experience with this *Ya Soup* project illustrates a more general issue with planning, which strongly suggests that there should be a clearer relationship between the worth of the plan and a decision to fund the plan than is often the case before involving officials and the community in planning for development. It is in this experience that has formed this decision to propose a special Small Community Grant Scheme to be linked to the Catchment Management Component

## **3. Rationale for MRC Involvement**

The rationale for MRC involvement is that its mission and authorized scope of work, based on the 1995 MRC agreement, provides the Riparian States with the means of tackling difficult water resource use issues in isolated border and mountain areas where poverty is often an important cause of environmental stress. It will enable the provision of some funds to ethnic minority development issues in a coordinated way, which is particularly difficult in trans-border areas as these people commonly cross borders in the ordinary course of shifting cultivation and trade. Ethnic minority people are often associated, correctly or incorrectly, with land degradation in their search for food security. The Riparian States see this Grant Scheme as an important tool in addressing poverty and food security in regions that are not easily assisted by more mainstream development agencies.

## **4. Target Groups and Target Area**

**The target group** includes local communities in isolated cross border and fragile regions where mainstream development funds are presently not available for the purposes identified for the Grant Scheme.

**The target areas** identified by the Riparian States include:

- The Dien Bien/Maung Mai region between Vietnam and Lao PDR. It is anticipated the Small Community Grant Scheme will provide funds for small activities planned by communities in the course of catchment planning.
- The Se San/Srepok basin region between Cambodia and Vietnam. In the event it is decided to undertake catchment management planning in connection with energy generation in this basin it is anticipated this will be funded separately. It is anticipated the Small Community Grant Scheme will provide other support for small activities planned by communities in the course of catchment planning.
- The Se Bang Hieng River basin (Quang Tri/Savanaket border region) between Vietnam

and Lao PDR on the Asian Highway 9. It is anticipated the Small Community Grant Scheme will provide funds for small activities planned by communities in the course of catchment planning.

- The Theun Hinboun Hydro-scheme area in Lao PDR. It is anticipated other funds already committed for this area by the energy company and a forestry concession owner would be augmented by small amounts from the Grants Scheme to undertake development to make best use of redirected water in this area.
- Tonle Sap Great Lake and/or Stung Pursat region in Cambodia. It is anticipated the Small Community Grant Scheme will provide funds for small activities planned by communities in the course of catchment planning.

It is noted that it may not be possible to begin in all of these regions in the short term.

## 5. Expected Benefits

- Improved resource use planning and reduced environmental damage over time, particularly in trans-border and ecologically fragile areas.
- More development in sensitive border areas where a lack of credit or grant funds has prevented economic development, particularly in isolated mountain areas occupied by ethnic minorities and other disadvantaged groups.
- Improved capacity to promote sustainable forest management through market and other means.
- An improved capacity to invest in a wide range of needs of isolated and ethnic minority communities in the target areas.
- Improved exposure of these isolated and ethnic minority people to the outside world in a coordinated way.
- Reduced negative impacts and enhanced more equitable benefits from resource use in trans-border and fragile sub-basin areas.

## 6. Objectives and Strategy

### 6.1 The objective

**The long-term goal** of this subcomponent is to build common knowledge between the Riparian States about the complex socio economic and ecological links between forests, water and agriculture and to be able to facilitate more 'holistic' and cross-sectoral approaches to managing the resource between the states, to ensuring continued 'health' of the Basin.

It specifically relates to the MRC Strategic Plan through:

- Key Result Area (KRA) 1, to promote sustainable natural resource management and development.
- KRA 4, to evaluate previous programs and to initiate new projects in accordance with MRC Strategic Plan.
- KRA 5, to improve the capacity of the MRC, including National Mekong Committees (NMC) and associated line agency staff to play a leading role in coordinating the Basin's water related activities.

**The specific objective** of this subcomponent is to provide a clear incentive for more rational planning for development to facilitate institutionalising a process of catchment management planning in selected MRB cross-border areas and other fragile sub-basins.

Provision of such a Grant Scheme for a wide range of community investment recognizes the central role of the rural community both as a cause of environmental stress and as an injured party where damage is occurring or would occur as a result of irrational planning. It recognizes that:

- Social pressures facing small communities are often passed onto the environment through unsustainable farming practices and magnify as they progress.
- Where the exploitation of resources is causing environmental problems there is often an agricultural solution that will minimize and even benefit the rural community in ways that simple compensation will not.
- Planning undertaken in isolation from potentially impacted communities will, even when well planned, be susceptible to misunderstanding and difficulty in implementation to the detriment of the resource project and the communities impacted.

## **6.2 The strategy**

The strategy is to focus local attention on real planning situations by providing access to a Small Grant Scheme able to be employed under agreed conditions to implement necessary small and medium scale action. It is also to develop links with other small grant schemes, bilateral donors and development lending institutions such as the ADB to facilitate borrowing for needed development in areas where cooperation is needed and currently not available from these institutions. The availability of small grant for action will provide the most useful learning environment for these isolated communities and the local government living in the area.

## **7. Outputs, Achievement Indicators, Milestones and Activities**

### **7.1 Outputs and achievement indicators**

- A capacity to direct small and medium scale actual investment to isolated trans-border and other fragile areas where investment is needed to safeguard the environment, address poverty or food security where the ecological integrity of an area is threatened by the lack of capacity for cooperative investment.
- Investments in the above areas.

### **7.2 Key milestones**

- Agreement to set up such a grant scheme to operate within the Basin detailing national investment approval procedures and procedures to approach lending institutions.
- Subscription of sufficient capital to warrant operation of the grant scheme (suggested to be USD 200,000 in the first year).
- Investment of at least USD 500,000 per annum from year three of the grant scheme.

### **7.3 Activities**

Activities proposed for this Scheme are as proposed by the MRC Secretariat. The ideas have been discussed in the second NMC meetings with each country, with some potential donors and lenders and were endorsed in the regional workshop in October 2000. The provision of this Scheme recognizes that catchment management planning for agriculture is a new concept for this region and may be confused with other national planning processes unless some tangible activities can result from the plans made. It also recognizes that investment funds are difficult to mobilize in these isolated regions in any case, particularly on the small scale that can be contemplated by local authorities. The Scheme is also intended to provide a convenient conduit for bilateral donors with small sums available for such objectives but not the means of reliably and economically planning or monitoring such investments in these remote areas.

Catchment management planning is essentially an interdisciplinary activity requiring attention in many areas. It is therefore intended the grant scheme and associated lending or investment might be directed to a wide range of activities including:

- Production related to agriculture, irrigation, fisheries and forestry.
- Local infrastructure, feeder tracks, water supply and sanitation.
- Environmental protection, community awareness and participation in activities related to

biodiversity and riparian ecology.

- Social interventions: health, vocational training and other assistance to the poor and ethnic minorities.

Access to the grant scheme will be provided where the purpose of the application can be shown to contribute to economic and environmental well being in these regions and can meet the operational guidelines of the scheme including financial viability and operational practicality. That It is proposed that, any operational unit of the MRC, as mutually agreed might utilize the grant scheme. It is proposed that the scheme would provides grants of a size that can be planned and administered at local levels, initial sums smaller than USD 250,000 per project. It is also envisaged the scheme will facilitate access to other funds under grant or loan conditions as detailed below.

The activities proposed for the Small Community Grant Scheme include:

- Providing a prospectus outlining the grant offered and procedures to be followed to access the scheme.
- The establishment of a donor consultative group to support the Scheme.
- Responding to funding requests in the form of appraisal reports and accounts of funding decisions taken.
- Publishing accounts of the scheme including evaluated results for the Riparian states and donors or lenders.
- Ensuring that agreed operational planning and monitoring and evaluation procedures are followed and that operations are transparent and accountable to stakeholders.
- Facilitating the involvement of lenders such as the ADB and the private sector to invest in these trans-border and fragile regions in a balanced way to the benefit of the community, the specific nation and the Basin as a whole.

## 8. Inputs and Cost Estimate

**The inputs** for this grant scheme will be related to the pace at which sub-basin watershed catchment management groups can be formed in the identified trans-border and fragile areas (See separate proposal for the catchment management subcomponent). This in turn will depend upon issues such as security, national priorities and funding available for the proposed Grant Scheme. The inputs for the MRC fund include dedicated staff within the Operations Division of MRC, initially one scheme manager and support staff. **The cost estimate** for the grant scheme is essentially open ended but is provisionally:

Cost Item	Year 1	Year 2	Year 3	Year 4	Year 5	Total
Capital subscribed	200,000	300,000	550,000	500,000	1,000,000	
Equipment & transport	50,000	20,000	10,000	0	0	
Operating costs for MRC	50,000	100,000	120,000	160,000	260,000	
<b>Total (USD)</b>						

Note: No MRC fee or contingency would apply to this grant scheme in the establishment phase

The budget may be augmented by loan funds from agencies such as ADB, grants from other bilateral donors or subscriptions by private sector resource users. Funds provided for particular projects such as the Dien Bien - Moug Mai project may or may not be channelled through this scheme at the discretion of the donor.

## 9. Organization and Management

The organization and management of this proposed Scheme, and the Catchment Management

subcomponent (See separate proposal) is intended to see most grants disbursed at Provincial and District offices to communities, under joint and several security arrangements, in trans-border and fragile zones with facilitation from National Mekong Committees and with overall coordination through the MRC Operations Division in Phnom Penh.

The use of international consultants would be reserved for establishment, in-service training, to assist with applications for medium to large funds from other agencies and for monitoring and evaluation. This policy may need to be reviewed during the first two years of the operation of this component.

## **10. Monitoring and Evaluation**

Monitoring and evaluation under this fund would be formulated in detail prior to subscription to the fund but would allow for monitoring for four broad purposes.

### ***Monitoring for donors or cooperating agencies***

Each agency and member country has its own requirements for monitoring and evaluation. The AIFP would facilitate M & E for cooperating agencies as agreed in the documents covering the cooperation. This would be the responsibility of the Public Information and Co-ordination Section.

### ***Monitoring for Small Grant Scheme management***

This would feature the normal accounting and audit functions for the operation of an international fund. Selected fund records would also be provided to the responsive monitoring and evaluation activities set up as part of the Catchment Management subcomponent.

### ***Benefit monitoring for MRC***

Benefit monitoring for the Fund would be according to the logic of the Activity Logframe for the operation of the fund in each country and developed during inception. This would be undertaken by the Natural Resources Development Planning Division to contribute to long term planning within MRC.

## **COMPONENT C: CAPACITY BUILDING FOR MRC**

### **Sub-component No. 7: Scholarships, Technical Exchange and Conferences**

#### **1. Introduction**

This proposal results from ideas generated in the MRC Secretariat and from discussions with NMC staff and line agency staff during fieldwork. The ideas were mentioned in the second round of NMC meetings held in May-June 2000 and endorsed at the regional workshop in October. The ideas address the need to build the capacity of MRC to facilitate the emergence of a 'collaborative learning' approach to change between the Riparian States.

#### **2. Issues to Be Addressed**

The water and land resources of the Mekong River Basin (MRB) are the basis of its agriculture, providing food and employment to about 85% of the population of about 60 million inhabitants. It also provides the staple diet of perhaps 300 million people. The Basin has the potential to expand food production many times over in response to demand if its resources are managed in a sustainable and cooperative manner. While the timing and pace of change towards increased

production is essentially unknowable, population and income trends indicate that world demand for food will continue to increase and change in composition. The World Water Forum conference in Amsterdam in March 2000 estimated that food demand from the MRB would increase by between 20 and 50% by 2030, with a corresponding increase in the demand for water.

The MRC mission includes developing basin plans for sustainable agricultural development and forest use but experience suggests that in the past MRC member countries have called on these planning skills only when they are looking for donor support. The AIFP needs to build its own capacity and the capacity of NMCs so member countries increasingly consider MRC as an agency to assist them with their own planning for cooperative development or maintenance of the MRB as is the case with other river basin commissions around the world. This need to build the capacity of MRC has both *external* and *internal* elements that relate to:

- The *reputation* of MRC among relevant development agencies, senior Riparian officials and politicians and the wider international community.
- The evolving skills and experience of MRC Secretariat staff, staff of NMCs and related line agencies and research institutions.

There are several directions to be pursued to build a capacity for continual learning about the Basin's agriculture and forestry so member nations see increasing value in cooperation through MRC:

- The continued development of agricultural data bases such as soil and water to complement other databases that already exist within MRC with other disciplines (being proposed under separate sub-components of the AIFP).
- Activities to build a network of opinion makers in agriculture and forestry across the Basin and to involve them in the process of investigating options for agriculture in the Basin, in effect a 'consultative panel' for collaborative planning.
- Specific activities to 'standardize' data, regulations or practices basin-wide that will contribute to sustainable development and utilization of water related agricultural resources across the Basin (also being proposed under separate sub-components of AIFP).
- Activities to provide education, study tours and research opportunities for Riparian staff associated with MRC, NMCs and relevant line agencies.

### 3. Rationale for MRC Involvement

The rationale for MRC to be involved in this activity is the normal requirement that institutions seek self-improvement in the face of changing circumstances. It recognizes the particular mission of MRC to facilitate cooperation in a constructive and *mutually beneficial manner* (from the 1995 Agreement). This is a different and complementary perspective from that of particular short-term focused line agencies that are involved in the different arms of agriculture. The Riparian states have expressed considerable interest in technical exchange and establishing collaborative efforts between their countries and internationally to gain a better understanding of the Basins' water and soils used in agriculture.

### 4. Target Groups and Target Area

**The target group** includes MRC secretariat staff, staff and seconded officers in the NMCs and relevant line agencies. It also indirectly includes opinion makers and other influential people involved in agriculture in the Basin, both from within the region and in the wider world that has an interest in sustainable agriculture and food supplies from the Basin.

**The target area** includes all of the MRB Riparian States. It is also intended to encourage cooperation with the observer nations of China and Myanmar.



## 5. Expected Benefits

The expected benefits of the component include improved capacity to facilitate sustainable agriculture in the Basin and to mobilize resources towards this end.

## 6. Objectives and Strategy

### 6.1 The objective

**The long-term goal** of this component is to institutionalise a collaborative approach to learning about change in agriculture in the MRB.

**The specific objective** of this component is to develop the capability of MRC (including the NMCs and concerned line agencies) to facilitate sustainable use of land and water for agriculture throughout the Basin. This requires capacity building in three directions that are mutually reinforcing:

- Building a professional cadre with the particular expertise and approach of a river basin commission.
- Improving the quality and ownership of knowledge on the Basin (being undertaken through the Water Use Efficiency component).
- Building a better institutional understanding of the complex socio-economic and ecological links between forests, water and agriculture, to facilitate more 'holistic' and cross-sector approaches to managing the agricultural and forest resources of the MRB.

It specifically relates to the MRC Strategic Plan through:

- KRA 5, to improve the capacity of the MRC, including National Mekong Committees and associated line agency staff to play a leading role in the BDP planning process.

### 6.2 The strategy

- To facilitate the development of MRC as a 'learning institution' able to provide its member countries with an up-to-date understanding of the 'health' and sustainability of agriculture in the Basin.
- To assist in planning for long-term development of agriculture in the Basin.
- To build both the capability and standing of the MRC so that the member countries will increasingly choose to use the MRC to plan for resource development in the Basin and so meet MRC's regional goals.
- To improve links between MRC and relevant agricultural research, academic and development institutions in the Basin and internationally to further facilitate the evolution of a long-term basin-wide perspective to the use of land and water for agriculture in the region.

## 7. Outputs, Achievement Indicators, Milestones and Activities

### 7.1 Outputs and achievements

- An improved human resource capability to undertake the duties of a river basin commission within the 4 Riparian States.
- An improved network of people involved in agriculture who are knowledgeable and supportive of MRC and its goals for agriculture.

### 7.2 Key milestones

- The recruitment of more Riparian staff for the AIFP and their enrolment in appropriate

Masters programmes, within one year of start up.

- The establishment of an agricultural programme consultative panel within one year of the programme having commitments to undertake USD10 million in activities over a 5 year period.

### 7.3 Activities

The activities proposed for capacity building originate partly from analysis of the ways in which the AIFP needs to contribute to MRC's capacity as a whole and partly from the proposals and ideas of Secretariat and NMC staff in the course of programme formulation. The activities proposed include:

- Scholarships for new Riparian staff for AIFP to enter into an approved masters (or doctoral in some circumstances) programme in a relevant faculty where the Masters research thesis can be on a project or activity related to the AIFP. It might also relate to some important emerging concern such as research to estimating the economic value (replacement cost) of natural service, such as the service standing forests provide agriculture in the MRB in the form of quality water for irrigation. Successful applicants must be prepared to sign a bond to work with MRC for at least 3 years after completion of the degree.
- Provision of funds for Riparian staff to attend relevant conferences and research exchanges in areas related to agriculture and river basin commissions.
- Provision of funds to recruit a consultative panel of prominent agriculturalists within the Basin and for the panel to meet on an AIFP activity site at least twice a year to discuss AIFP activities and issues.

## 8. Inputs and Cost Estimates

*The inputs* for this sub-component include:

- 2 Master scholarships each year for 3 years (6 in all).
- Funds for the consultative panel, technical exchanges and the newsletter.

*The cost estimate* is provisionally estimated to be:

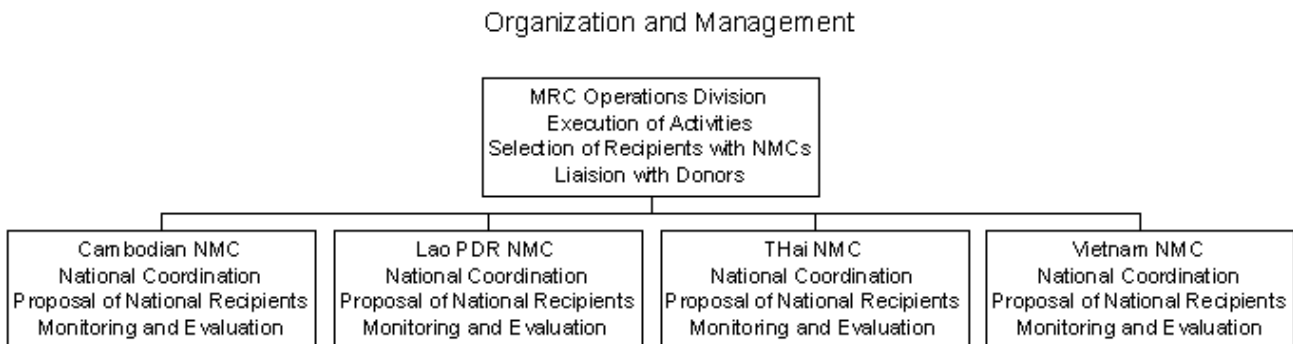
Cost Item	Year 1	Year 2	Year 3	Year 4	Year 5	Total
Scholarships	100,000	100,000	100,000	-	-	
Specific support to forestry	480,000	480,000	480,000	480,000	280,000	
Technical exchange & conferences	30,000	30,000	30,000	30,000	30,000	
Consultative panel	-	20,000	20,000	20,000	20,000	
Contingency 10%	61,000	63,000	63,000	53,000	33,000	
Secretariat Support Costs	73,810	76,230	76,230	64,130	39,930	
<b>Total (USD)</b>						

## 9. Organization and Management

The organization and management proposed is depicted in the figure below and features:

- The planning of the programme and selection of recipients being undertaken by the operations Division of MRC in consultation with NMCs in each Riparian State and the Human Resources Development Division of MRC.

- The funds being disbursed and coordinated with other programmes of MRC by the MRC Operations Division under consultation with NMC offices in each Riparian State.
- Monitoring and evaluation being planned and undertaken by the MRC.



## 10. Monitoring and Evaluation

Monitoring and evaluation for this activity would be formulated in detail at inception but would allow for monitoring for three broad purposes.

### ***Monitoring for donors or cooperating agencies***

Each agency and member country has its own requirements for monitoring and evaluation. The AIP would facilitate M & E for cooperating agencies as agreed in the documents covering the cooperation. This would be the responsibility of the Public Information and Co-ordination Section.

### ***Monitoring for AIFP programme management***

Monitoring and evaluation would be a fundamental tool for AIFP programme management within the Operations Division. Responsive M & E is a term used for a system of monitoring that seeks to improve transparency and accountability between stakeholders, by including an M & E agreement in all operational plans. Under this agreement the stakeholders responsible for providing inputs to the activity under the operational plan would agree to meet periodically to assess progress, to challenge the assumptions underlying each activity, to bring up and resolve all 'claims' about each other's performance. All 'concerns' about the activity and any 'issues' that cannot be resolved need to be taken up to higher authorities. This is likely to include an annual M & E meeting at each Riparian State research station or site with attendance from MRC Secretariat, each NMC and selected researchers from each institution.

The proceedings and resolutions of meetings would be minuted and the minutes kept for inspection by line agencies, NMCs and MRC Secretariat staff. One duty under each agreement would be that a representative from one meeting must personally present unresolved issues to the next level of programme management. If not resolved at that level it would become the responsibility of a member of that meeting to present the issue higher, and so on until resolution.

### ***Benefit monitoring for MRC***

Benefit monitoring under AIFP would be according to the logic of the Activity Logframe developed during inception. This would be undertaken by the Natural Resources Development Planning Division to contribute to long term planning within MRC.

## Sub-component No. 8: Co-ordination of the AIFP

## 1. Introduction

This proposal results from an understanding of the recent organizational changes within MRC. The proposal addresses the need to coordinate activities that deal with the complex socio-economic and ecological links between forests, water and agriculture, to facilitate more 'holistic' and cross sector approaches to managing the agricultural and forest (and fisheries) resources of the MRB.

## 2. Issues to Be Addressed

The water and land resources of the Mekong River Basin (MRB) are the basis of its agriculture, providing food and employment to about 85% of the population of about 60 million inhabitants. It also provides the staple diet of perhaps 300 million people. The Basin has the potential to expand food production many times over in response to demand if its resources are managed in a sustainable and cooperative manner. While the timing and pace of change towards increased production is essentially unknowable, population and income trends indicate that world demand for food will continue to increase and change in composition. The World Water Forum conference in Amsterdam in March 2000 estimated that food demand from the MRB would increase by between 20 and 50% by 2030, with a corresponding increase in the demand for water.

MRC's mission is to enable *sustainable* development to meet such demands. The Food and Agriculture Organization (FAO), has defined sustainable agriculture and rural development as: "*The management and conservation of the natural resource base, and the orientation of technological and institutional change in such a manner as to ensure the attainment and continued satisfaction of human needs for present and future generations*". The recent re-organization of MRC Secretariat recognises the multi-disciplinary nature of this task, the need to integrate the activities of specialist line agencies to bring a long-term perspective to exploiting the resources of the Basin to meet present and future demands for food.

This reorganisation also recognizes that most investment in developing this capacity to grow food in each nation will be borne by each nation and its farmers, assisted by specific line agencies, who in turn may seek financial and/or technical assistance on bi-lateral basis from individual donors and finance agencies and that the role of the MRC is related to the promotion of development consistent with maintaining the 'ecological integrity' of the MRB systems upon which agriculture is based.

## 3. Objectives and Strategy

### 3.1 The objective

**The long-term goal** of the coordination system proposed is to institutionalise a collaborative approach to managing change in the productive use of natural resources in the MRB to promote sustainability.

**The specific objective** of this is to develop the capability of MRC (including the NMCs and concerned line agencies) to manage its programme in harmony with others as part of an integrated approach to river basin management for healthy agriculture and forests.

It specifically relates to the MRC Strategic Plan through:

- KRA 5, to improve the capacity of the MRC, including National Mekong Committees and associated line agency staff concerned with agriculture and forestry to play a leading role in the BDP planning process.

### 3.2 The strategy

The strategy is to facilitate management within MRC as a 'learning institution' able to implement programs in an interdisciplinary way. To improve links between the AIFP program, facilitating productive long term development in the Basin and those programs aimed at planning and managing the 'environmental protection' aspects of the MRC mission, such as the Environment Program.

#### 4. Programme Activities and Milestones

##### 4.1 Activities

The activities proposed for the management of the AIFP programme assume close cooperation with each NMC and that NMC staff will undertake most day-to-day coordination in each country. However a significant number of programme activities involve cooperation between nations and between different line agencies. This will involve MRC in an over-all coordination and liaison role, both between countries and between the countries and interested donors, particularly those providing support to the proposed MRC fund.

The activities proposed include:

- Planning and scheduling programme activities at a macro-level through an AIFP Steering Committee.
- Facilitating collaborative planning and management between the Riparian States in cross border areas, in collaborative research, and in 'fragile' sub-basins requiring a more interdisciplinary approach.
- Facilitating the undertaking of catchment management planning in sub-basins where significant resource based investments are likely that will impact on the farming community.
- Facilitating financial and activity monitoring, evaluation and reporting to the Riparian States and concerned donors as depicted in the organization and management chart below.
- Preparing an annual programme plan in consultation with NMCs.

The activities are subject to discussion and modification within MRC Secretariat.

##### 4.2 Key milestones

- The recruitment of more Riparian and other staff for the AIFP with appropriate experience in interdisciplinary programme management, within three months of obtaining additional donor support for the Programme.
- Active involvement in the working committees within MRC that are involved in the MRC core programs such as WUP, BDP and Environment Programme within the first 6 months of 2001.

#### 5. Inputs and Cost Estimates

**The inputs** for managing the programme assume the programme increases in size somewhat evenly over the first three years of the planned 2001-2006 period:

- A budget for staff to plan and implement the program.
- Additional transport and other facilities to facilitate more and more economical involvement in activities in the field in each MRC nation.
- Additional budget to support the activities of NMCs in support of a larger AIFP.

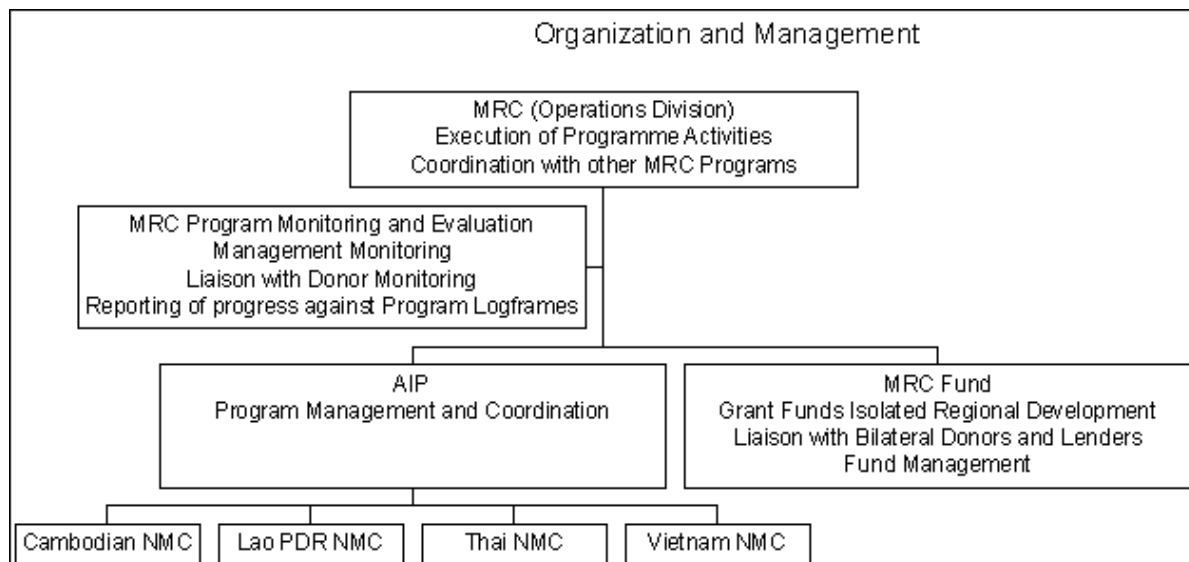
**The cost estimate** will need to be amended in the light of the pace at which activities actually increase but are provisionally estimated to be:

Cost Item	Year 1	Year 2	Year 3	Year 4	Year 5	Total

Senior advisor	150,000	150,000	150,000	150,000	150,000	
Support staff in HQ & NMCs	100,000	150,000	200,000	200,000	200,000	
Additional equipment & vehicles	50,000	20,000	10,000	10,000	10,000	
Contingency 10%	30,000	32,000	36,000	36,000	36,000	
Secretariat Support Costs	36,300	38,720	43,560	43,560	43,560	
<b>Total (USD)</b>						

## 9. Organization and Management

- The over all coordination of the programme being undertaken by the Operations Division of MRC.
- Annual and other detailed planning and management being undertaken by the AIFP programme in coordination with NMCs.
- Liaison with relevant donors and lending agencies relevant to agriculture being undertaken by the AIFP.
- Monitoring and evaluation being planned and undertaken by the MRC as detailed below.



## 10. Monitoring and Evaluation

Monitoring and evaluation for the management of the programme would be separate from programme management and would allow for monitoring for three broad purposes:

### ***Monitoring for donors or cooperating agencies***

Each agency and member country has its own requirements for monitoring and evaluation. The AIFP would facilitate M & E for cooperating agencies as agreed in the documents covering the cooperation. This would be the responsibility of the Public Information and Co-ordination Section.

### ***Monitoring for AIFP programme management***

Monitoring and evaluation would be a fundamental tool for AIFP programme management within the Operations Division. Responsive M & E is a term used for a system of monitoring that seeks to improve transparency and accountability between stakeholders, by including an M & E agreement in all operational plans. Under this agreement the stakeholders responsible for

providing inputs to the activity under the operational plan would agree to meet periodically to assess progress, to challenge the assumptions underlying each activity, to bring up and resolve all 'claims' about each other's performance. All 'concerns' about the activity and any 'issues' that cannot be resolved and so need to be taken up to higher authorities. This is likely to include an annual M & E meeting at each Riparian State research station or site with attendance from MRC Secretariat, each NMC and selected researchers from each institution.

The proceedings and resolutions of meetings would be minuted and the minutes kept for inspection by line agencies, NMCs and MRC Secretariat staff. One duty under each agreement would be that a representative from one meeting must personally present unresolved issues to the next level of programme management. If not resolved at that level it would become the responsibility of a member of that meeting to present the issue higher, and so on until resolution.

### ***Benefit monitoring for MRC***

Benefit monitoring under AIFP would be according to the logic of the activity Logframe. This would be undertaken by the Natural Resources Development Planning Division to contribute to long term planning within MRC.

**MEKONG RIVER COMMISSION****AGRICULTURE, IRRIGATION AND  
FORESTRY PROGRAMME  
(AIFP) for 2001-2005****(approved by the MRC Council, 24 October 2000)****TABLE OF CONTENTS**

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## **PREFACE**

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The Mekong River Commission (MRC) Secretariat is pleased to present its first fully integrated and comprehensive Agriculture, Irrigation and Forestry Programme (or Land and Water Use Programme). In contrast with the past focus on food production only from irrigation, this programme focuses on broader activities to promote the sustainability and further development of food production from the land and water resources of the Basin where cooperation between the MRC member countries (the riparian countries) is required for success.

The Programme has been developed through a multi-stage participatory process with member Governments and reflects their expressed desire to work cooperatively towards understanding and influencing land and water use in the Basin for agriculture and forestry over the long term, consistent with the mission of the MRC with regard to sharing water and planning for sustainable resource use.

It takes advantage of the provisions in the MRC 1995 Agreement to facilitate cooperation between the riparian countries to promote a more 'holistic' approach to planning and managing the land, water and forest resources of the Basin. This involves particular attention to some isolated and fragile cross-border regions where institutional constraints inhibit effective integrated planning and, in particular, attention to disadvantaged groups where poverty and intensifying land, water and forest use is or could upset the present ecological integrity of the Basin as a whole through erosion and changed water runoff.

The Programme recognizes that land, water and forest users in agriculture and forestry cause most environmental impacts on the Basin and are in turn most impacted by environmental impacts from other resource use, such as energy generation. It promotes integrated planning between concerned resource users and the rural community to maximize benefits for all, instead of the unsustainable and mutually un-rewarding compensation arrangements that sometimes eventuate in these situations.

It devotes much attention to building the capacity of the MRC, National Mekong Committees

and relevant line agencies to act collaboratively as a river basin commission in what is largely an agricultural area and features strong links with other programmes of the MRC to this end.

The scope of the Programme is ambitious in the short term but the Basin's role as a major world food source justifies this, necessarily collaborative effort, in the long term. This document has been prepared as a basis for discussion with our partners on how this can be supported over the next five years, 2001-2005.

## **Joern Kristensen**

Chief Executive Officer

## **ABBREVIATIONS**

ADB	Asian Development Bank
AIFP	Agriculture, Irrigation and Forestry Programme
AIM	Agriculture and Irrigation Management
AIP	Agriculture and Irrigation Programme
AIFP	Agriculture, Irrigation and Forestry Programme
BDP	Basin Development Planning
FAO	Food and Agriculture Organization
GIS	Geographical Information System
GPS	Global Positioning System
HRD	Human Resources Development
ICID	International Committee on Irrigation and Drainage
IWMI	International Water Management Institute
JC	Joint Committee
KRA	Key Result Area
M & E	Monitoring and Evaluation
MFI	Multilateral Financing Institution
MRB	Mekong River Basin
MRC	Mekong River Commission
MRCS	Mekong River Commission Secretariat
NIAPP	National Institute for Agriculture Planning and Projection
NMC	National Mekong Committee
PAR	Participatory Action Research
PIN	Project Identification Note
PTD	Participatory Technology Development
SIRAP	Sustainable Irrigated Agriculture Project

WUG	Water User Group
WUP	Water Utilization Programme

## EXECUTIVE SUMMARY

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Balanced and efficient land and water use is essential to long-term food security and forestry production in the Mekong River Basin (the Basin or MRB). Agriculture is the most important industry that relies on the water resources of the Basin and forestry is a key to the regularity and quality of water runoff for agriculture. Agriculture provides employment for some 85% of the Basin's population and its efficiency is a key to poverty alleviation. The MRB is one of the world's most significant food sources, particularly for the growing urban population of the Greater Mekong Sub-region. It provides the staple diet for perhaps 300 million people and can, with care, produce much more as demand increases.

Activities related to agriculture and forestry are the most significant direct human environmental influences on the Basin and much of this impact occurs across national borders, requiring a regional approach to change. Other uses of the water resources of the Basin, such as energy generation, also impact directly on people engaged in agriculture (and fisheries). Lasting solutions to many of these environmental impacts are to be found in inter-sectoral action at the local level between these industries and rural communities, often across national boundaries.

### Programme objective

The objective of the Agriculture, Irrigation and Forestry Programme (the Programme or AIFP) is:

*Cooperative sustainable development and utilization of land and water resources to the benefit of the Basin community, and to contribute to poverty alleviation and food security.*

### Programme strategy

The programme strategy consists of a collaborative learning approach to change in resource use to meet the evolving needs of Basin communities, as these become progressively apparent. While objectives and intended outputs are fixed, actions undertaken to achieve these will remain flexible. The Programme strategy focuses on three factors: water use (and drainage) efficiency; catchment management planning (by concerned stakeholders); and capacity building of the Mekong River Commission (MRC) Secretariat, National Mekong Committees (NMC) and line agencies within relevant sectors.

The Programme provides MRC with a micro-level community-based mechanism for the basin development process, particularly in cross-border situations where impacts from land and water use in one zone impacts upon others. The strategy particularly addresses cross-border zones in isolated areas where lack a means for integrated planning is a serious constraint to poverty alleviation with consequent environmental impacts from unbalanced land use such as deforestation and erosion, in turn threatening long-term food security.

The strategy also facilitates macro-level policy development and capacity building in the forestry sector, building on the detailed forest cover and watershed classification work already undertaken under MRC by making it a basis for catchment planning and resource use monitoring for all land and water use for agriculture, forestry (and fisheries). The Programme contributes to all of the MRC Strategic Plan goals.

## **Programme component descriptions**

### **Component A - Water use efficiency**

**Immediate objective:** To develop a collaborative applied research network between the riparian countries to improve water use efficiency in the technical and social (management) spheres and in particular to evolve links between water user groups and the water utilization rules being developed under the Water Utilization Programme (WUP) to facilitate their implementation. This will involve water use efficiency in the main irrigation areas, in the use of ground water and in upland agriculture and a study of the multi-functionality of rice farming in different ecological zones.

**Main outputs and activities:** The main output of this component will be improved water use efficiency in agriculture over time and an ability to monitor and influence water use through water user groups according to the rules being developed under the WUP. Programme activities will focus on both the technical and managerial and social aspects of water and related input delivery systems. The outputs will include technical materials and field demonstrations for extension purposes, policy advice and data and other input to the Basin Development Planning (BDP) process and the WUP and succeeding activities, calibrated according to ecological zone to suit MRC database formats.

The specific activities proposed include:

- Applied research and technology transfer for the modernization of existing public irrigation systems in lowland areas and ground water and other water use in upland areas, including the monitoring and management of water through water user groups and the facilitation of links with the rules being developed under the WUP. Factors such as soil salinity and acidity, optimal input use, alternative cropping patterns and a model to show the multi-functionality of water use in paddy irrigation in a range of ecological zones will be addressed.
- The further development of a land and water inventory of the 4 countries, in common units and ecological zones to facilitate land use zoning and other resource use planning in agriculture and forestry (and fisheries). Specific assistance will follow to develop draft land use zone maps for Cambodia and Lao PDR.

### **Component B - Catchment management**

**Immediate objectives:** To institutionalise catchment management planning in cross-boundary and other areas, particularly where there is evidence of environmental damage and to improve the capacity of the riparian countries to manage existing resources, particularly forestry and associated bio-diversity, including reduction and prevention of illegal logging and forest related crimes, and facilitating the evolution of secure resource use rights with regard to water, land and forestry.

**Main outputs and activities:** The main output will be a capacity to plan and implement agricultural and agro-forestry development activities (including irrigation and drainage) on a catchment basis in border and other fragile areas where adverse impacts from resource use are being experienced that have some basin-wide implication. Programme activities will focus on developing community-based means of addressing environmental issues as the Environment Programme or other means detects these and will particularly address poverty

alleviation, gender and ethnic minority issues and food security where these are factors in resource use imbalances.

The activities will include resource use monitoring and management involving cross-border cooperation including preventing and reducing illegal logging and forest related crimes. Such monitoring will utilize forest use concepts from the MRC watershed classification and forest cover mapping projects and will integrate these into planning and implementing sustainable land and water use in agriculture (and fisheries). The activities will include a means to direct small grants towards community-based projects planned in the course of catchment management planning.

The specific activities proposed include the establishment of a community based catchment management planning capability in the following sub-basins according to this priority, which may be altered at the time of detailed planning:

- The Dien Bien/Moung Mai border area between Vietnam and Lao PDR. This activity will address poverty alleviation and food security among ethnic minorities, upper watershed erosion control, bank stability and flood control, irrigation modernization, crop diversification and fishery development in valley bottoms and lower slopes.
- The Se San/Srepok river basin between Cambodia and Vietnam. This activity will facilitate community based planning for balanced resource use between forestry, agriculture, fisheries and energy generation to facilitate an optimal sustainable resource use result for each country and will pay particular attention to poverty alleviation and food security among the inhabitants. Planning will consider socio-cultural traditions of ethnic minorities in forest, fish and other resource management.
- The Se Bang Hieng river basin (Quang Tri/Savanahket border region) between Vietnam and Lao PDR. This activity will address poverty alleviation and food security among the ethnic minority and other people living in the area with the view of funding small agricultural, irrigation and forest activities that will enhance balanced resource use. A particular study will be made on the impact of rapid development of Asian Highway 9 on the population in the area.
- The Theun Hinboun hydro-scheme sub-basin area in Lao PDR. This activity will focus on developing irrigated agriculture and fisheries uses for damaging water outflow from this scheme, as an adjunct to and a more sustainable resolution of a resource allocation difficulty than the compensation measures being implemented.
- The Tonle Sap/Great Lake region and/or the Strung Pursat region of Cambodia in particular. This activity will focus on integrated catchment management planning to promote balanced resource use, particularly between forests, agriculture and fisheries to safeguard the integrity of the Lake in the MRB as a whole.

Utilizing the established catchment planning capability in the above regions as a base, specific studies would be undertaken in these subject areas related mostly to forestry as follows:

- A review of forestland ownership and forestland allocation procedures.
- Establishment of a framework, manual tools and related systems for qualitative data collection on gender, culture, forestland and resources rights and management among local communities.
- An assessment of expanding markets for non-timber forest products and services and transfer payments from lowland water users to upland forest-based communities to conserve and improve the management of their forests.
- Development of regional collaboration in controlling prevention and suppression of cross-border illegal trade of forest and wildlife products.
- The promotion of market based instruments (including carbon credit trading) to increase forest management returns and so the incentives for forest conservation.

A special small community grants scheme will be established to enable small-scale

development activities at local sub-basin level planned in the course of catchment planning to be funded. This will provide an incentive for cooperation at local level and 'real life experience' for collaborative learning about catchment management issues. The provision of such infrastructure rehabilitation or new construction would depend on the submission of a feasible operational plan and monitoring system that utilizes the principles of catchment management planning and transparent accountability. The activity would either provide grants directly or facilitate community approaches to other relevant bilateral or multi-lateral small grant schemes. It would also facilitate applications for funding of larger projects that might be considered through normal funding channels.

### **Component C - MRC capacity building**

**Immediate objective:** To improve the capacity of MRC Secretariat, NMCs and related line agency staff to plan sustainable development of agriculture and forestry on a collaborative basis. In particular to promote a more 'holistic' inter-sectoral approach between agriculture, forestry and other MRC Programmes and to assist similar activities at NMC level. This will enhance the basin development planning process as an ongoing activity.

**Main outputs and activities:** The main output of this activity will be an enhanced capacity to plan and monitor land and water use in agriculture and forestry in the Basin in a collaborative way between the four riparian countries. Activities under this component will focus on building a professional cadre with the particular expertise and approach of a river basin commission. Improving the quality and ownership of data generated under the Programme and building a better institutional understanding of the complex socio-economic and ecological linkages in land and water use by people.

The specific activities proposed include:

- The provision of 'customized' education and research fellowships to relevant staff prepared to commit to continuing to work on MRC related activities. This will involve collaboration with relevant agricultural and forestry related research and education institutions within the region and elsewhere and linking research to specific activities being conducted under the Programme.
- The provision of funds to enable riparian staff of MRC Secretariat, NMCs and relevant line agencies to attend conferences related to river basin management.
- The provision of funds for study tours for the above staff and for community representatives involved in the Programme.
- The provision of funds to recruit a consultative panel of regional and international opinion leaders in land and water use in agriculture and forestry.

### **Monitoring & evaluation**

The Programme would feature a system of responsive monitoring and evaluation for programme management purposes in addition to facilitating monitoring by donors as required and benefit impact monitoring for long term planning in MRC.

**Time frame: 60 months (2001-2005)**

### **Programme budget (rounded figures)**

<b>Component</b>	<b>Total Cost</b>	<b>External Funding Sought</b>
Water Use Efficiency	16,000,000	16,000,000

Catchment Management	9,700,000	9,700,000
Capacity Building for MRC	5,400,000	5,400,000
<b>Total programme cost (USD)</b>		

\* The riparian country contribution averages 10% of these estimates.

## 1. INTRODUCTION

This section introduces the Agriculture, Irrigation and Forestry Programme (the Programme or AIFP) and places it in context with the Mekong River Commission (MRC) and its agreed mission. It details the process of development of the Programme through review, analysis and workshops or meetings with MRC Secretariat staff, each National Mekong Committee (NMC) and relevant line agency staff and field trips. It justifies the need for external support and records the endorsement of these phases by the MRC Joint Committee and the Regional Workshop early in October. This report has been endorsed by the MRC Council and submitted to donors.

### 1.1 Development of the Agriculture, Irrigation and Forestry Programme

The Mekong River Commission (MRC) was formed in 1995 to enable the signatory countries to:

*Cooperate in a constructive and mutually beneficial manner for sustainable development, utilization, conservation and management of the Mekong River Basin water and related resources (from the preamble to the Agreement).*

Three years later, in October 1998, the MRC Council retained and extended these objectives when it adopted as the MRC mission:

*To promote and coordinate sustainable management and development of water related resources for the four countries' mutual benefit and the people's well being, by implementing strategic programmes and activities and providing scientific information and policy advice.*

While this mission covers both the development and conservation and management aspects of these objectives, over the last 5 years agencies have increasingly funded particular sector development activities on a bilateral basis. Accordingly, to achieve focus on the river basin related aspects of this mission, the present strategic thrust of MRC lies in the following three main directions, the first two of them specifically covered in the 1995 Agreement:

- Developing "rules" for the cooperative utilization of water through the Water Utilization Programme (WUP), thus facilitating conservation and management.
- Developing a Basin Development Planning (BDP) process, thus facilitating cooperative sustainable development of water related resources.
- Environmental monitoring.

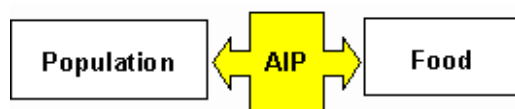
The present practice of the MRC is that development activities are only undertaken if they help fulfil its mission as a river basin commission, concerned with the sustainable use of the shared water resources of the member countries. The MRC does not seek to duplicate the activities of agencies supporting bilateral development activities. It complements these by a clear focus on activities that benefit or impact on the long-term interests of two or more of the member

countries with regard to the use of land and water resources. At the same time activities of the MRC programme supports the information base and institutional capacity of the relevant ministries in member countries. This focus is given detailed expression in the MRC Strategic Plan and annual work plan.

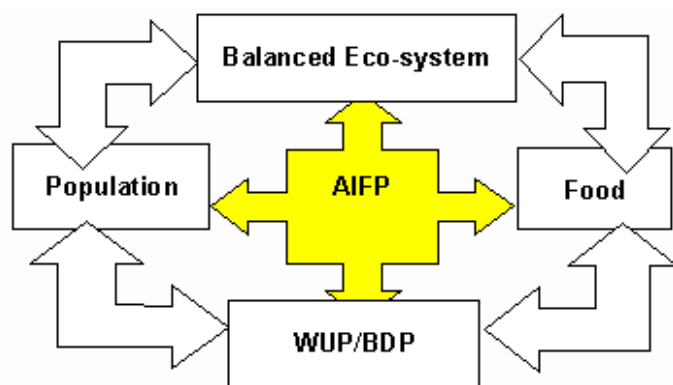
The Agriculture, Irrigation and Forestry Programme (AIFP) is the MRC's means of addressing the use of land and water in agriculture, irrigation and forests. The institutional linking of agriculture and forestry is not unusual among the riparian countries and recognises the inter-relationship between forests and sustainable agriculture through the key role of forests in the timing and quality of water runoff for irrigation (and fish and other biotic products). The linkage facilitates integrated planning on a Basin and sub-basin basis, which is particularly important in meeting MRC long-term objectives for sustainable land and water resource use in the Mekong River Basin.

Since the development of the original Agriculture and Irrigation Programme (AIP) from 1996, thinking regarding the role of Agriculture and Forestry in the MRC has evolved from focused attention on balancing population with the need for food from irrigation (and forest products under another Programme from conserved or planted forests) to include consideration of the capacity of the MRB to sustain and grow production of various expected services, including food and forest products as a whole system. This development in thinking was represented diagrammatically by a then member of the Vietnam NMC, as follows:

**Figure 1: 1996 Approach to Programme Formulation**



**Figure 2: 2000 Approach to Programme Formulation**



Source: Mr Luu Phu Hao

This document details the development of the scope of the new AIFP from this thinking, its links to the MRC mission and the activities proposed over the next 5 years.

The Programme has been developed from:

- A review of MRC documents including the 4<sup>th</sup> draft of the AIP (MKG/R – 97016) and associated documents.
- Discussions and a workshop with Secretariat staff in February 2000.
- Workshops with each National Mekong Committee (NMC) in each country in March 2000.



- Visits to a range of activities proposed by each NMC during May and June.
- A second round of workshops with each NMC and relevant line agency staff also in May and June.
- A decision taken in July 2000 to incorporate forestry into the AIP.
- A regional workshop, held in Phnom Penh on 2<sup>nd</sup> & 3<sup>rd</sup> of October, between concerned Secretariat staff, NMCs and relevant line agencies from each riparian country and some potential donors as observers.

As a result of this process, the Secretariat, each NMC and the MRC Joint Committee meetings in March and July 2000 have endorsed the focus of the AIP (hereinafter called AIFP). Each NMC has proposed activities for the AIFP for the period 2001-2005 and discussed the proposals of other NMCs. The document includes a synthesis of some 25 of these ideas combined with the approved forestry programme into specific activities a summary of which was presented to the Joint Committee in July 2000 and full version to the regional workshop in October 2000.

The regional workshop endorsed the draft AIFP with minor changes and each riparian country agreed to cooperate with all other countries in the programme activities, as proposed, with minor alterations reflected in this document. The MRC Council approved the Programme at the end of October 2000.

## **1.2 Strategic Importance of Land and Water Use to the Basin**

The land and water resources of the Basin are the basis of its agriculture and forestry, providing food and employment to about 85% of the population of about 60 million inhabitants. It also provides the staple diet of perhaps 300 million people. The Basin has the potential to expand food production many times over in response to demand if its resources are managed in a sustainable and cooperative manner. While the timing and pace of change towards increased production is essentially unknowable, population and income trends indicate that world demand for food will continue to increase and change in composition. The World Water Forum conference in Amsterdam in March 2000 estimated that food demand from the MRB would increase by between 20 and 50% by 2030, with a corresponding increase in water demand.

MRC's mission is to enable *sustainable* development to meet such demands. The Food and Agriculture Organisation (FAO), has defined sustainable agriculture and rural development as:

*The management and conservation of the natural resource base, and the orientation of technological and institutional change in such a manner as to ensure the attainment and continued satisfaction of human needs for present and future generations.*

The mission of MRC is entirely consistent with these principles, as is the present strategic thrust of MRC through WUP, BDP and the Environment Programme.

## **1.3 Importance of Agriculture and Forestry Programme to MRC**

AIFP is important for MRC and its member countries because reliable and shared knowledge about agricultural use of land and water and the role of forests in regulating the rate and quality of rain runoff and consequent erosion, is essential to meeting MRC's goal of sustainable development in the Basin's most important industry. Developing rules for water use and planning for long-term development requires recognition of the complex socio-economic and ecological links between forests, land, water and agriculture. If these rules and plans are to be practical and utilized in a collaborative way in the field then an ability to facilitate a more 'holistic' and cross-sectoral approach to planning by MRB stakeholders at different planning levels is needed. This requirement is more urgent than is sometimes

appreciated, as discussed below.

Cropping intensity in the irrigated parts of the Basin ranges from an average of about 1 crop per year in Cambodia to an average of almost 2 crops in the delta region in Vietnam. The potential may be closer to 3 crops per year but any increase in response to the demand expected by the World Water Forum will result in much greater demand for water in the dry season when the river is low and supplies are already stretched. Even a change in crop types in response to market demands requiring water at different times than present crops has the potential to increase water demand at low water times leading to resource allocation problems.

Conceptually WUP addresses the issue of sharing irrigation water by seeking to develop water utilization rules based on an understanding of the mass balance of water source and water use. BDP addresses other concerns by seeking to harmonize development of these resources in the long-term interests of its member countries. AIFP is necessary to address the gaps in these programmes by developing a capacity for *collaborative action at the national and field levels* through:

- Collaborative investigations and activities to understand and improve present land, water and related input use and effluent flow in agriculture in the future.
- Collaborative investigations and activities to promote further establishment of water user groups and to develop links and incentives to facilitate the implementation of the water use rules developed under the WUP.
- Collaborative development and extension of sustainable catchment management processes for forestry and agriculture within and for the Basin.
- Facilitating cooperative research, data collection and data sharing to:
  - Develop a feeling of 'ownership' of the data by each of the member countries (shared knowledge).
  - Improve the quality of the data over time.
  - Facilitate MRC's role as a 'learning institution' about river management for its member countries and eventually for its two observer countries of Myanmar and China.

These are accepted and needed duties of river basin commissions worldwide, particularly where agriculture is the main industry, and constitute the components of AIFP as elaborated in Section 2 below.

Fortunately, in comparison with most major river basins worldwide and in the region, the MRB, as understood in historical terms, still displays ecological integrity in spite of considerable development of agriculture and irrigation. Although there is evidence of species loss and a reduction in forests that poses dangers for the future there are clear reasons to believe that significant further development is possible without unduly disturbing this integrity, if the land and water resources are managed with care and cooperation.

#### **1.4 Cause and Effect Relationships in Sustainable Agriculture and Forestry**

Although, as noted, the MRB can be considered 'healthy' by comparison with other basins there are signs of stress, discussed below, that are impacting on agriculture and forestry, and need to be addressed in a collaborative manner by the riparian countries.

##### **Evidence of ecological stress**

- Evidence of increasing unplanned deforestation threatening the rate of runoff and consequent erosion (Strategy Study on the Development of Watershed Management. MRC. Jan 2000).
- Evidence of increased sediment flows from some tributaries, particularly in the Lao PDR,

from deforestation (Evaluation of Sediment Data in the Lower Mekong Basin. MRC. 1993).

- Evidence of reduced bio-diversity with known and unforeseeable impacts on ecological integrity and so food production (Strategy Study cited above).
- Evidence of competition for resources or resource allocation difficulties, for example, between the use of water for intensive rice cultivation or fish in Cambodia (MRC Fisheries Programme) and in border areas with Vietnam, and between the use of land for rain-fed agriculture or forestry in many upland areas in each Basin country threatening fish production, the major source of animal protein, and forests with impacts discussed above (Strategy Study cited above).
- Problems with escaping soil salinity, particularly in Thailand, and intruding salinity from the sea impacting on agriculture and biodiversity, particularly in Vietnam (MRC Environment Programme 2000).
- Increasing acid sulphate soils impacting on agriculture and bio-diversity, particularly in Cambodia and Vietnam (MRC Environment Programme 2000), and possibly
- Increased soil and water contamination from inappropriate use of manufactured chemicals in all countries impacting on humans and bio-diversity (MRC Environment Programme 2000).

These stresses, threatening sustainable food production from land and water resources, can be and are sometimes addressed under bilateral and national programmes but are particularly difficult to address in border areas and where problems in one country impact on others.

### **Poverty as a factor in ecological stress**

The per capita annual income of the Basin population engaged in agriculture is among the lowest in the world, although there is considerable variation between countries that masks the real poverty situation in some countries. Pressures by these poorer people to earn even a subsistence income are among the causes of these stresses. This is exemplified through deforestation in areas of shifting cultivation in Lao PDR although the problem exists in each country due to the isolation and lack of alternative income earning opportunities of upland peoples.

### **Skills gaps and gender issues as barriers to change**

Lack of knowledge among farmers of sustainable agriculture under modern intensive conditions is another cause of stress. For example, manufactured chemicals and fertiliser are marketed widely but techniques to optimise use for sustainable intensive agriculture are not widely known among farmers in the Basin.

There remains a long recognised skills gap issue with women in rural areas who have disproportionately less access to new knowledge than men although they are major contributors to agricultural labour and the effective decision makers in some sectors of agricultural production. Lack of access to knowledge and decision-making power by women may impact significantly in other areas of agricultural life with consequential impact on the health of children.

### **Capacity gaps in river basin management for agriculture and forestry**

While capacity gaps in land and water use planning for agricultural and forestry management within each MRC country are often being addressed under various national programmes, there are particular capacity gaps in cooperative planning and management between the riparian countries, and within MRC itself. This is seen in a lack of understanding about the relationships between the physical, economic and socio-political sub-systems operating across the Basin.

This translates into a lack of collective capacity to visualize different outcomes for the Basin and to plan for desired change in a collaborative way. This is particularly significant in cross-border regions where there are institutional constraints to effective collaboration at local level that have been noted by MRC to have inhibited development and attention to environmental impacts.

### **Data, laws, regulations and agricultural and forestry practices**

Data units, agricultural and forestry resource related laws, regulations, and agricultural and forestry practices vary widely across the Basin. Non-standard data are often difficult to utilize or agree on for planning and monitoring purposes. In some countries laws, regulations and practices for safe equipment, pesticide and fertilizer use are relatively undeveloped, while in others regulations may, for example, forbid use but not manufacture and export of some dangerous chemicals to other Basin countries.

### **Land, water and forest resource use rights**

There are a variety of land, water and forest use rights across the Basin, while this diversity will remain, the lack of clear enforceable rights to use these resources are a constraint to effective husbandry by users. There is a need to document these rights as an initial step to facilitate collaborative planning for sustainable use. (Water rights are being documented under the WUP. AIFP provides a means of supplementing these at some local levels). There is also a need to monitor cross-border trade in forest and other products, such as endangered species, relevant to maintaining ecological integrity.

### **The role of AIFP in addressing sustainability in agriculture and forestry**

The central role of AIFP is to facilitate sustainable agriculture and forestry in the FAO sense by assisting the riparian countries to collaboratively optimise the productive use of Basin land and water resources while minimizing or addressing these stresses.

As noted, poverty is one significant cause of ecological stress, which in turn impacts further on poverty. While there are many bilateral and multilateral development agencies addressing the issues of poverty, skills gaps and gender issues, the role of AIFP is to work with these agencies to address these issues where they are contributing to stress on the ecological integrity of the Basin, particularly in cross-border and other 'fragile' situations where bilateral programmes have particular difficulties with delivery.

The role of AIFP in capacity building is to build better networks for cooperative learning, planning and managing the land and water resources for agriculture and forestry in the Basin, particularly with regard to integrating management processes for a more sustainable result.

The role of AIFP with regard to standardizing data for planning and monitoring and laws, regulations and practices for equipment and chemical use is similar to that for the issue of poverty, the issues are to be addressed where inconsistencies constitute a risk to ecological integrity.

The role of AIFP with regard to resource use rights is to study the linkages between use rights and sustainable management behaviour and then to make policy recommendations to each government.

### **1.5 Importance of Cooperative Action for Sustainable Agriculture and Forestry**

Cooperative action is a key role for the MRC and is either necessary in some cases or highly desirable in other cases to address each of these ecological stresses.

## **Cooperation in optimising water use and allocation for irrigation**

Cooperation in optimising water use is necessary where water use in one country leads to undesirable impacts in downstream countries such as:

- Reduced river flow due to inequitable (or inefficient) water use upstream at times critical for production or drainage downstream.
- Overuse of ground water in one region reducing its availability in other regions.
- Unplanned or untimely release of water from reservoirs or hydro-schemes.

Cooperation in optimising water use for agriculture in the Basin is highly desirable where there are significant synergistic benefits to each country to be obtained through cooperation such as:

- Common 'ownership' of existing data and knowledge on water use and the socio-economic and agronomic imperatives driving water use will greatly improve the process of cooperative planning to optimise water use in irrigation across the Basin.
- Co-operative action between line departments and institutions across national borders to research and implement activities to optimise water use leading to faster learning.
- Co-operative action between authorities and water users in the implementation of water utilisation rules (generated under the WUP) at the farm level.

## **Cooperation in catchment management**

Cooperation in catchment management planning for a 'healthy sub-basin' is similarly necessary where:

- Unsustainable rain-fed agriculture disrupts runoff and infiltration, increasing sediment and flood loads downstream or depletes ground water resources leading to a requirement for action (and costs) in one country to benefit production in another nation.
- Competition over resource utilization between different users leading to in-appropriate resource use, for example, where intensive rice cultivation with associated pesticide use is endangering fish, and where swidden agriculture is intensifying in forest areas and fragile areas subject to erosion.
- Over (or inefficient) use of manufactured chemicals in one part of the watershed in one country has unacceptable impacts on agricultural (or fisheries) production in another country.
- Non-standard regulations and policing practices between countries inhibits effective control of dangerous chemicals, for example, inconsistent regulations are reported to have enabled some people to manufacture chemicals illegal to use in their country for sale in other countries in the Basin where use is not regulated.

Cooperation in catchment management planning is similarly highly desirable for each country where synergistic benefits to each country can be obtained from cooperation such as:

- Common 'ownership' of information about the socio-economic and agronomic imperatives driving land and water use, in terms of different crops and practices that impact on sustainable agriculture, will lead to faster learning about agriculture (and more trans-border production/marketing chains).
- Co-operative action between line departments and institutions across national borders to research and implement activities related to catchment management leading to faster learning about the Basin and so greater benefits from the use of the Basin's agricultural resources.
- Cooperative action by countries with comparatively stronger institutions and experience to assist others will also improve the collective capacity to act.

## Cooperative learning between countries

Cooperation between MRC countries is necessary if MRC is to upgrade its ability to provide an institution through which the MRC countries and its observer countries can meet the agreed mission for MRC. Learning about land and water use in agriculture and forests between countries will occur at different levels:

- National opinion makers, prominent academics, the press and relevant private sector investors and lenders.
- Policy makers and legislators.
- Middle level management in line agencies in each country and NMC and MRC staff.
- Prominent equipment and service providers to agriculture in the region.
- Donors, NGOs and other change agents operating in the region.
- Some in the farming community where cooperative activity occurs (or needs to).

## Cooperation between disciplines

Cooperation between technical units within MRC is necessary if effective basin planning is to occur. In relation to the AIFP, co-operation is necessary:

- Between AIFP and WUP and BDP to provide useful rules for water use in agriculture and useful plans for agriculture.
- With the Fisheries Programme to optimise catchment planning for sustainable production according to the requirements of the community and the countries.
- With the Navigation Programme to facilitate agricultural input and output flows between countries via the river.
- With the Human Resources Development (HRD) unit, particularly through their proposed research and training network.
- With the crosscutting activities of the Environment Programme, the Technical Services Division and socio economics if development is to be sustainable and equitable.

## 1.6 Need for External Support

Each member country of MRC has its own line ministries with the authority to address the opportunities and threats to land and water use for agriculture, irrigation and forestry in the Basin, although the capacity and resources available to address these challenges varies considerably between countries. As discussed above, there are now many development agencies prepared to provide assistance for development on a bilateral basis and it would be duplication for MRC to address these challenges separately. MRC needs external support only to fund activities that are *necessary and*, in the long run, *sufficient* to meet its collaborative mission, working in cooperation with national (and sometimes international) agencies.

For reasons related to history, each MRC country has often looked only for activities for funding through MRC that it feels meets its own development objectives. Since about 1995, with the formation of MRC, this focus has evolved towards better cooperation although commitment to activities of essentially common interest is still weak. A national focus is desirable as it ensures that activities funded will be 'owned' by the country or countries responsible for implementation. However external support for MRC to facilitate activities of essentially common interest will remain until its member countries see justification in meeting MRC's costs fully from within their national budgets.

A further justification for external support is the wider international benefit to be derived from the continued evolution of an effective river commission for the Basin. This recognises:

- The Basin's present and future capacity to be a major sustainable source of food for the

fast growing urban populations in the region.

- The necessity to minimize the potential for international disputes over resource use in the Basin, as in all the river basin 'food bowls' in the world.

## **2. AGRICULTURE, IRRIGATION AND FORESTRY PROGRAMME**

This section outlines the long-term goal, immediate objectives and programme approach of the AIFP and specifies its linkages with the MRC Strategic Plan. It outlines the selection criteria for activities to be included in the AIFP that have been agreed with each NMC, Secretariat staff and endorsed by the MRC Joint Committee. Together with the preceding section it constitutes guidelines for the development of the AIFP as a 'rolling programme' over the medium term.

### **2.1 Goal of AIFP and Links to the Strategic Plan**

The goal of the Programme is to contribute to the achievement of the MRC mission, as set out in Section 1.1 above, in areas related to land and water use in agriculture, irrigation and forestry. This can be expressed as:

*Cooperative sustainable development and utilization of land and water resources to the benefit of the Basin community, with particular reference to food security and poverty alleviation.*

As discussed above, the achievement of this goal has both long and medium term aspects. In the long term the AIFP must contribute to the development of the MRC as a 'learning institution', a centre of excellence in the area of land and water use planning and water use efficiency.

In the short and medium term AIFP will need to satisfy immediate objectives of MRC member countries that also contribute to this long-term mission if it is to achieve deep institutional commitment to MRC's goals as expressed in the MRC Strategic Plan. The AIFP will contribute to each of these goals as follows:

- Assist in the establishment of realistic rules for water utilization (goal 1).
- Assist in the establishment of an effective and useful basin planning process (goal 2).
- Be instrumental in integrating socio-economic considerations into MRC activities (part of goal 3).
- Contribute to ongoing and new programmes and projects (goal 4).
- Contribute to capacity building within MRC in the areas of agricultural planning (goal 5).

### **2.2 Programme Approach of the AIFP**

Consistent with developments within MRC, the AIFP is to take a rolling programme approach to planning and implementation. This has two main aims: to secure a holistic, interdisciplinary approach, and to achieve strategic focus combined with flexibility of implementation.

Experience has shown that it is difficult or impossible to plan for all the challenges and opportunities that will arise during implementation of a development programme stretching over many years. Detailed up-front planning also reduces flexibility and makes it difficult to address changes in the external environment as they arise, or to take full advantage of the availability of new knowledge generated through implementation. Experience also shows that capacity building similarly needs to be a continuously evolving and iterative process of design, implementation and evaluation if it is to remain abreast of new knowledge and the changing

requirements of an institution like MRC.

The approach of AIFP will be to maintain a flexible, adaptable programme that can easily respond to changes in the external environment and build on experience gained through implementation. The activities to be included will be those requested by riparian countries that meet MRC criteria for selection (see below) but requests for support will likewise change from the previous focus on free-standing projects towards annual negotiations on activity priorities under the framework of agreed-upon programmes.

Sufficient initial analysis will be undertaken to justify inclusion in the programme but detailed planning for outputs scheduled to be produced several years into the future is to be progressively undertaken by the appropriate stakeholders closer to the time of implementation. Lessons learned from implementation in the early years will be identified through monitoring and evaluation by the relevant stakeholders and used to plan expanded operations in later years. The process of responsive monitoring and evaluation to enable this is described in Section 6 below.

Under this approach, strategic focus is secured through proper definition of objectives, outputs and achievement indicators. Ownership and effectiveness will be achieved through proper institutional arrangements for programme management, activity selection, evaluation, information flow and resolution of disagreements. This should lead to more effective MRC support through clearer objectives, better integration of activities, shorter planning cycles and increased implementation flexibility. The burden placed on MRC member countries in developing project requests to the MRC will also be reduced, without the level of support being reduced.

### **2.3 A Logical Framework for the AIFP Activities**

The logical link between the AIFP goal, immediate objectives, outputs, activities and inputs discussed above was developed into a diagram, depicted in Figure 1 below, and used in formulating the AIFP with NMCs and Secretariat staff and in explaining the AIFP strategy to the Joint Committee. The diagram summarizes the immediate objectives of the AIFP and shows examples of activities, and outputs considered necessary to achieve these. It also shows how these contribute to other key goals of MRC, particularly the WUP, BDP and Environment Programme.

This analysis has been tabulated into a Logical Framework Matrix (Logframe) in Table 1 below, also shared with Secretariat staff and NMCs. It identifies verifiable indicators of success and the means of verifying these through programme monitoring and evaluation discussed in Section 6. It also lists the key assumptions behind the logic of the Programme. These assumptions are discussed in Section 7 below as risks to success that need to be monitored in the course of programme evaluation and brought to the attention of key stakeholders where they are shown to have been unjustified by events.

The analysis has resulted in the organization of the AIFP into three components that each addresses an immediate objective identified above and provides a long-term framework for the AIFP. The Programme is designed to build on experience gained through implementation. While the objectives and outputs of the programme will remain fixed, as discussed above, actions undertaken to achieve the outputs and objectives will remain flexible and subject to annual planning. Section 3 describes activities that are considered by MRC and NMCs to be achievable within the period 2001 and 2005.

### **2.4 Activity and Project Selection Criteria**

The focus of the AIFP is activities of interest to its member countries that enable MRC to meet its mission with particular regard to the efficient and sustainable use of water and land



resources upon which agriculture and forestry depends. Selection of activities to achieve this focus requires mutually acceptable criteria so that an achievable programme can be formulated smoothly over time.

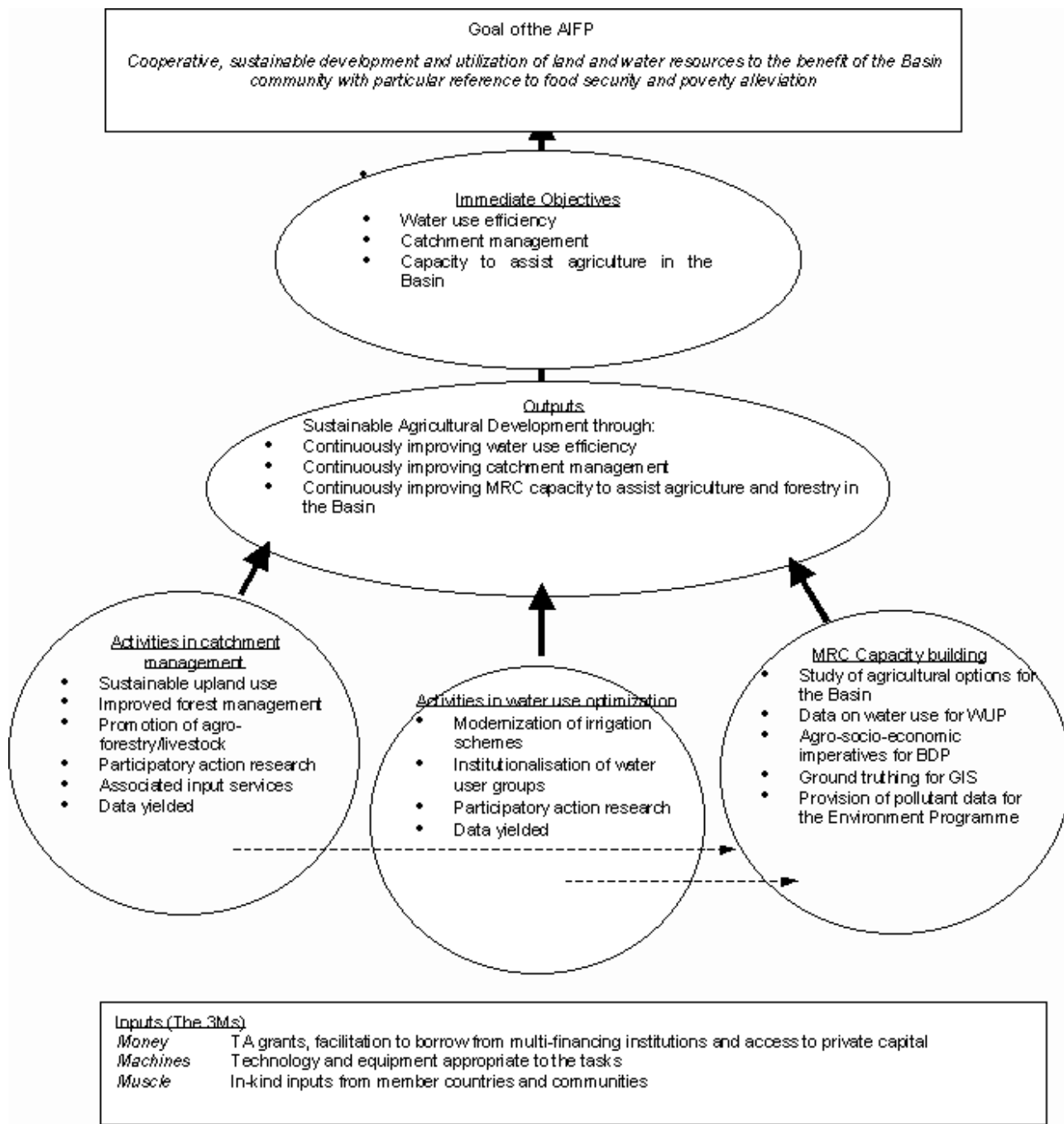
Following discussion during the first round of NMC meetings in March 2000 the MRC and NMCs have agreed on three tests, all of which need to be satisfied, for activities to be taken in by MRC. The activities must have:

- Some significant *basin-wide implication* that is not being adequately covered under other bilateral/national programmes in the Basin.
- *National priority*, that is at least one country and an appropriate institution (public or private) must want the activity to be undertaken for a national purpose.
- *A relevance to the MRC mission*. MRC in this sense includes NMCs and staff of relevant line agencies. The degree of relevance, as assessed by its relevance to the MRC Strategic Plan, would provide guidance as to the degree of MRC involvement. This might extend only to providing input to an activity essentially undertaken by others. Where an activity is highly relevant but unlikely to be taken up by others, MRC would consider execution through a national institution under contract.

## 2.5 Programme Formulation

Consistent with the MRC Strategic Plan and the 'rolling programme' approach, each NMC submitted ideas in the form of Project Identification Note (PIN) on behalf of line agencies in their country. These came from either previously requested projects or activities or from new ideas. These were compiled according to the Strategic Planning process and PIN format as revised for the AIFP. This revision has the effect of clarifying the importance of the three criteria of basin-wide implication, national priority, and relevance to the MRC Mission. The formulation of AIFP as detailed in Section 3 has involved all major MRC stakeholders and it is expected the Programme will evolve further as a result of monitoring and evaluation and stakeholder planning activity during the medium-term plan period of 5 years.

### Figure 1: Programme Logical Framework



**Table 1: Logical Framework Matrix for AIFP**

	<b>Verifiable indicators for success</b>	<b>Means of verification</b>	<b>Assumptions</b>
<p><b>Goal</b></p> <p><i>Cooperative sustainable development and utilization of land and water resources to the benefit of the Basin community, with particular reference to food security and poverty alleviation.</i></p>	<ul style="list-style-type: none"> <li>• Cooperation between MRC countries through MRC in the development and utilization of land and water related resources to the benefit of the Basin community.</li> </ul>	<ul style="list-style-type: none"> <li>• Agreements and implementation of agreements to utilize land and water resources in a cooperative way through MRC.</li> </ul>	<ul style="list-style-type: none"> <li>• MRC countries continue to see the value of cooperation through MRC in land and water use for agriculture and irrigation and forestry development and utilization.</li> </ul>

			<ul style="list-style-type: none"> <li>• Poverty and food security in critical areas can be addressed.</li> </ul>
<p><b>Immediate objectives</b></p> <ol style="list-style-type: none"> <li>1. To improve water use efficiency in agriculture.</li> <li>2. To improve 'healthy' management of the whole Basin for agriculture and forestry.</li> <li>3. To continuously improve the capacity of MRC to assist agriculture and forestry in the Basin.</li> </ol>	<ul style="list-style-type: none"> <li>• Improvements in water use efficiency in irrigation, drainage and rain-fed agriculture.</li> <li>• Few signs of erosion, salinity, pesticide and other effluents in the river flow, even low season flow.</li> <li>• Improvement in resource allocation for agriculture.</li> <li>• Availability of readily accessible data and other inputs for planning within MRC and NMCs.</li> </ul>	<ul style="list-style-type: none"> <li>• MRC and national monitoring.</li> <li>• Databases in MRC and NMCs.</li> <li>• Demands for assistance by MRC countries and other relevant stakeholders.</li> </ul>	<ul style="list-style-type: none"> <li>• MRC countries facilitate data collection and monitoring.</li> <li>• An initial database is constructed.</li> <li>• MRC countries and water users cooperate to achieve 'healthy' basin management for agriculture.</li> <li>• Ethnic minorities in critical areas participate</li> <li>• Donors support capacity building of MRC.</li> <li>• A data management and planning process is established with the cooperation of MRC countries.</li> </ul>
<p><b>Output</b></p> <ol style="list-style-type: none"> <li>1. Continual improvement in the use of land and water resources for agriculture and forestry.</li> <li>2. Continual improvement in the 'health' of the catchment used in agriculture and irrigation.</li> <li>3. Continuous improvement in the capacity of MRC to contribute to cooperative basin planning for agriculture.</li> </ol>	<ul style="list-style-type: none"> <li>• Completed projects that achieve both national short term and MRC long-term objectives for efficient water use and a healthy catchment for agriculture.</li> <li>• Improved networks in agriculture across the Basin.</li> </ul>	<ul style="list-style-type: none"> <li>• Project evaluation reports.</li> <li>• Completed plans involving agriculture and irrigation undertaken by MRC.</li> <li>• Demand for more planning by MRC.</li> </ul>	<ul style="list-style-type: none"> <li>• Donors and MRC countries seek MRC execution for projects that contribute to MRC long-term objectives.</li> <li>• Poverty alleviation in critical areas is achieved.</li> <li>• MRC countries and other relevant stakeholders increasingly see MRC as an appropriate and useful source for basin planning related to agriculture and irrigation.</li> </ul>
	<b>Verifiable indicators for success</b>	<b>Means of verification</b>	<b>Assumptions</b>
<p><b>Activities</b></p> <ol style="list-style-type: none"> <li>1. Planning and execution of projects or programmes that contribute to water use efficiency.</li> <li>2. Planning and execution of</li> </ol>	<ul style="list-style-type: none"> <li>• Relevant projects or programmes planned and executed with the involvement of MRC in a executing, coordinating role alone or in cooperation with other agencies.</li> </ul>	<ul style="list-style-type: none"> <li>• Project evaluation reports.</li> <li>• Continued availability of useful data and other input to the basin planning process for agriculture.</li> </ul>	<ul style="list-style-type: none"> <li>• Projects or activities identified to contribute to water use efficiency and a healthy catchment used in agriculture, irrigation and forestry and are wanted by MRC countries.</li> </ul>

<p>projects or programmes that contribute to a 'healthy' catchment used for agriculture and forestry.</p> <p>3. Planning and execution of projects or programmes that contribute to basin planning for agriculture and forestry.</p>	<ul style="list-style-type: none"> <li>• Relevant projects or programmes planned as part of the basin planning process.</li> </ul>		<ul style="list-style-type: none"> <li>• MRC member countries continue to see value in facilitating data collection for MRC purposes.</li> </ul>
<p><b>Inputs (the three Ms)</b></p> <ol style="list-style-type: none"> <li>1. <i>Money</i>: TA grants, facilitation to borrow from MFIs and access to private capital</li> <li>2. <i>Machines</i>: technology and equipment appropriate to the task</li> <li>3. <i>Muscle</i>: in kind input from MRC member countries</li> </ol>	<ul style="list-style-type: none"> <li>• Provision of TA grants funds and/or loans for relevant projects or programmes facilitated by MRC.</li> <li>• Provision of appropriate technology and equipment through MRC.</li> <li>• Provision of inputs in kind by MRC countries and water users.</li> </ul>	<ul style="list-style-type: none"> <li>• Project evaluation reports.</li> </ul>	<ul style="list-style-type: none"> <li>• Donors and MRC countries see value in utilizing MRC to facilitate funding for relevant projects or programmes.</li> <li>• MRC has appropriate technology.</li> <li>• MRC countries and water users see value in providing inputs in kind.</li> </ul>

### 3. PROGRAMME COMPONENTS

The programme components identified below consist of groups of activities that are considered necessary to achieve the AIFP goal. The role of AIFP is to support such activities where cooperation is necessary for success, or where synergisms are likely, or where there will contribute significantly to understanding of the interdependency between MRC countries and its observer countries.

This support will often involve activities in catchments that cross international boundaries but will include activities that can generate useful planning information for a particular ecological zone where this is lacking. In such cases the identification and investigation of ecological problems, undertaken cooperatively, will be important in planning, and management of land and water across the Basin.

This section describes the proposed activities of the AIFP for the period 2001- 2005 broken into the three components discussed above. The activities included are either new activities or previously requested activities that are consistent with the goal and selection criteria provided in the guidelines set out in Section 2 above. The requests by each NMC were formulated by each NMC in the MRC Project Identification Note (PIN) format following the first NMC round of meetings and a selection of activity sites visited by the AIFP formulation mission in the course of the second round of visits in May-June 2000. Some 25 of these PINs were selected and formulated into this programme and outlined to the JC meeting in July.

This Programme was then endorsed with minor alterations in a regional workshop in early October 2000. The level of detail provided in each activity is related to the level of detail provided in the PIN requests or possible as a result of field visits. An important point raised in

the regional workshop was the necessity to allow for different institutional arrangements in each country to suit the situation in each country.

Forestry activities were incorporated into the programme and outlined to the JC by adding activities already approved under that Programme to emphasize the inter-dependency between forests and sustainable use of land and water resources and this merging is approved by the MRC Council in October 2000.

### **3.1 Component A - Water Use Efficiency**

**The objective** of this component is to facilitate collaborative applied research into methods for improving the use and sharing of MRB water resources in agriculture, principally in irrigation. It covers both paddy and upland agriculture and takes a broad view of factors that influence water use efficiency. It includes such aspects as water user group systems, involving them in the implementation of water utilisation rules being developed under the WUP, and also built on previous work of the AIFP in Thailand and Lao PDR, water delivery systems, alternative crops and cropping patterns and efficient fertilizer and other chemical input use. It includes some modelling to show the multi-functionality of rice production under paddy conditions, the contributions made by the paddy system to runoff control, erosion control, infiltration and climate modification.

**The strategy** is to facilitate collaborative learning between research institutions in the 4 riparian countries in areas of interest to each country where these contribute to improving water use efficiency in the Basin as a whole.

**The rationale for MRC involvement** is that the development and maintenance of useful water utilization rules (being developed through the WUP) requires common knowledge among the riparian countries about the socio-economic and agronomic imperatives driving water use in each country. It requires a means of investigating and developing means and incentives by which the rules for utilising water can influence actual water use at the farm level. It also requires a collaborative means of improving the efficiency of such use to maximize sustainable production of valued products using available water, particularly in periods of low water, to provide an additional incentive to refine and follow the rules generated.

**The target group** includes, directly, national staff in each country engaged in relevant research and, indirectly, agricultural water users in the Basin.

**The expected benefits** include:

- Better shared knowledge about water use in different agricultural regions and for different crops.
- A more developed Water User Group (WUG) system in the riparian countries that will be responsive to rules for water use being developed under WUP.
- Improved water use efficiency over time.
- An improved collaborative capacity to investigate water use issues related to the allocation of water between the riparian countries.

**The component activities** listed below are a combination of 9 PIN requests from the 4 MRC member countries where the common interest is investigating water use efficiency in a collaborative way. Activities for improving water use efficiency have been divided into subcomponents reflecting the significant difference between the main irrigation systems situated in lowland areas and upland agriculture. Although the activities for each country have

been endorsed in the regional workshop held early in October 2000 there was a range of opinion regarding the most suitable institutional arrangements in each country and in some countries it may be more suitable to coordinate the implementation of these subcomponents through the same institution.

### **Sub-component No. 1: Water Use Efficiency in Paddy Irrigation System**

**The activities** proposed under this subcomponent recognize that water use efficiency in the main irrigation systems varies between countries and is generally low. This is particularly so with regard to the management of water once it leaves the major irrigation head works and primary canals and reaches the farm users. There is a need, identified by the riparian countries, to collaboratively investigate existing water use efficiency in each country, to exchange information and facilitate the introduction of new institutional and technical means of improving efficiency in each country for different zones. The member countries see this as building on previous work of the AIFP and as an important contribution to the WUP and BDP processes ongoing within MRC. The proposed activities include:

- Identify pilot areas in each country that are typical of significant ecological zones in each country and describe the water use characteristics in technical and management terms.
- Identify other related activities in each country and establish working links and complementary programmes.
- Undertake experiments, with farmers, through Participatory Technology Development (PTD) and interested private sector self-funded participants, into different technical and management systems that are expected to lead to improved efficiency.
- Investigate and trial systems and incentives to involve water user groups, through Participatory Action Research (PAR) in the implementation of water use rules being developed under the WUP.
- Investigate soil salinity and acidity related to water use in irrigation.
- Investigate methods of minimising flood risk in irrigated areas.
- Develop a forecast model of the variation of water flow and quality under different relevant cropping patterns and water use systems investigated including a model of water pumping from the main stream between Lao PDR and Thailand.
- Document, digitise and share the data obtained in cooperation with the MRC Technical Support Division and assist with 'ground truthing' of MRC remote sensing activities by this Division and data requirements of the WUP, BDP and Environment Programme as mutually agreed.
- Facilitate the development of plans to modernize these and other systems as appropriate.

### **Sub-component No. 2: Water Use Efficiency in Upland Agriculture**

**The activities** proposed under this sub-component recognize that efficient water use in upland agriculture will be vital in allocating water for agriculture in the seasonal low river period and from underground aquifers. It recognizes that cropping patterns are changing with changing demands for food in urban areas and that this in turn will have impacts on water use and the timing of water demand. It recognizes that water use efficiency in upland agriculture needs to be considered broadly to include water delivery and storage systems, land use practices (particularly those that might lead to erosion) and optimal input use for maximum sustainable output. It recognizes that upland water use systems development is poorly developed among the riparian countries (although this varies between countries) and that a high level of international input and exchange will be needed to prepare for an anticipated future increase in demand.

There is a need, identified by the riparian countries, to collaboratively investigate water use in upland agriculture in its broad sense to include delivery and storage systems, water user management systems, land use practices, input optimisation, alternative cropping patterns

and to do this in a range of significant ecological zones. The member countries see this as a significant contribution to the ongoing WUP, BDP and Environment Programme within MRC. As this sub-component is essentially the same as the previous one, except for geographical location and research institutions, the proposed activities, outputs milestones and achievement indicators are substantially same as those above and so are not repeated.

### **Sub-component No. 3: Land and Water Resources Inventory**

The data collection activities result from some 6 PIN ideas from NMCs that can be grouped together into a continuation of previous projects undertaken by the MRC Technical Support Division to gather, standardize and share data on water and soil resources in the Basin. The riparian countries see this particular group of activities as contributing to the WUP, BDP and Environment Programme of MRC.

**The activities** in this sub-component essentially relate to a continuation of the previous soils and water resources development project undertaken by the Technical Support Division. In part the activities build on progress achieved under that project, in part they put new resources into solving problems on that project and in part they respond to requests listed in the 6 PIN ideas put forward by the NMCs. The activities include:

- To agree on standard analytical techniques for soil analysis between the 4 member countries.
- To extend field work to 'ground truth' mapping work already undertaken by MRC and take spectral signatures of the geo-units sampled and log these with a GPS data logger for calibration with other digitised map generation.
- To assist the Technical Support Division to organize agriculture related data for publishing on the MRC website.
- To propose draft land use classifications for Cambodia and assist in preparing land use zone maps for the Cambodian government, with particular regard to the watershed of the Great Lake.
- To assist the government of Lao PDR with similar activities in Lao PDR.

### **Sub-component No. 4: Modelling the Multi-functionality of Rice Farming**

**The activities** proposed for this sub-component are the result from discussions within MRC Secretariat and the idea has been communicated to NMCs during the second NMC meetings and discussed during the proposed regional workshop in October. The programme is to be undertaken in three phases, two of which would be undertaken in this programme period:

The first phase would be a data search or reconstruction among national research institutes, relevant international research institutes with cooperation of WUP, BDP, and each NMC. The specific activities are suggested to include:

- Selection of an appropriate research institute in each country.
- Undertaking a data and literature search among relevant national and international research institutes to facilitate planning for the modelling task.
- Defining data gaps in collaboration with WUP, Environment Programme and the establishment of field measurement programmes with cooperating farmers.

The activities of the second phase would be proposed as a result of the first phase. In general, the second phase would involve selection of a mathematical model type that will provide a satisfactory basis for describing the functionality of rice fields.

The models will describe and model paddy field crop-water use and impacts/contributions on infiltration to groundwater, stability of river stream flows, flood control, land conservation and

the impact on bio-diversity and ambient temperature. A spectral signature of each type of field modelled will be taken in referencing the results to geo-units in the MRC database and on satellite images.

The third phase would be long-term monitoring to be undertaken as a 'core activity' by MRC to maintain and evolve the database in collaboration with each member country.

### **3.2 Component B - Catchment Management**

This component is broken into two sub-components: one consists of the planning and implementation of activities in particular sub-basins: while the other is a Small Community Grant Scheme designed to enable financing of activities planned under the component, either through grants through MRC or from other small grants schemes or other development agencies and financiers, facilitated through this scheme.

#### **Sub-component No. 5: Catchment Management**

**The objective** of this component is to institutionalise a process of catchment management planning in selected MRB cross-border areas and where resource use in one domain (For example, energy generation) is creating stress to other users of a sub-basin (For example, the impact of intensive agriculture on fisher-people and shifting cultivators on downstream agriculture or forests).

Catchment management planning is an interdisciplinary activity that provides a rational basis for optimising the use of the resources of the sub-basin for the local community and the particular country and the Basin as a whole. It involves consideration of forestry, fisheries, local services and ethnic minorities. It recognizes that:

- The central role of the rural community both as a cause of environmental strain and as an injured party where damage is occurring or would occur as a result of irrational planning (see Section 1.4 & 1.5 above).
- Social pressures facing small communities are often passed onto the environment through unsustainable farming practices and magnify as they progress.
- Where the exploitation of resources is causing environmental problems there is often an agricultural solution that will minimize and even benefit the rural community in ways that simple compensation will not.
- Planning undertaken in isolation from potentially impacted communities will, even when well planned, be susceptible to misunderstanding and difficulty in implementation to the cost of the resource project and the communities impacted.

While this sub-component utilizes watershed classification and management systems that owe much to forestry strategies, there are practical differences between the implementation of activities related to primary forest, species diversity and ecosystem preservation, and activities related to agriculture, irrigation, and fisheries. Accordingly the component has been divided into activities that overlap in the area of planning and some implementation, and some activities that are significantly different.

**The strategy** is to facilitate collaborative planning (learning) for actual development or amelioration activities in sensitive cross-border areas and other areas where the interests of the Basin as a whole are impacted or potentially impacted by lack of an institutional capacity to undertake interdisciplinary planning and action.

To provide an incentive and focus for local planning and 'learning by doing', the component



will be associated with a small community grants scheme (see below) able to be employed under agreed conditions to implement necessary small and medium scale action. The scheme will also develop links with other small grants schemes and development lending institutions such as the ADB to facilitate borrowing for needed development in areas where cooperation is needed and now not available from these institutions due to the small scale of the activities.

**The rationale for MRC involvement** is that its mission and authorized scope of work based on the 1995 MRC Agreement provides the riparian countries with the means of tackling difficult land, water and forest resource use issues in isolated border and mountain areas where poverty is often an important cause of environmental stress. The sub-component builds on the very valuable work undertaken by the MRC forestry programme in classifying fragile watersheds, many of which are situated in cross-border areas.

Poverty alleviation and food security are now overarching aims in each riparian country and the isolation and small populations in many of these cross-border catchments mitigates against delivery of poverty alleviation activities on cost of delivery grounds. Since MRC has a goal to address these concerns where they are impacting on land, water of forest resources and it has the duty to mobilise the necessary cooperation, it can address poverty alleviation and food security in these areas.

This will include particular attention to ethnic minority development issues in a coordinated way, which is particularly difficult in trans-border areas as these people commonly cross borders in the ordinary course of shifting cultivation and trade. Activities will include investigations into the range of socio-cultural resource management practices and beliefs in these catchments to mobilise these in resource management planning and implementation (Ethnic minority people are often associated, correctly and/or incorrectly, with land degradation in their search for food security).

The riparian countries see such action as a valuable contribution of experience and data for the BDP process being developed at a more macro-level between the countries through MRC. Importantly they also see this sub-component as a vital means of addressing poverty, food security and environmental protection in regions that are not easily assisted by more mainstream development agencies as discussed above, this point being emphasised in the regional workshop in October 2000.

**The target group** includes government officials charged with administering these isolated areas and the often poverty stricken people who inhabit the areas. It also includes national and private sector investors in energy, transport corridors, forestry, agro-forestry and people engaged in processing and marketing where these may cause impacts on the rural community who in turn may cause impacts on the investments through irrational resource use. In particular the target group will include ethnic minorities and other poverty stricken groups in fragile catchments. The target areas identified by the riparian countries include:

- The Dien Bien/Muong Mai border area between Vietnam and Lao PDR. This activity will address poverty alleviation and food security through upper watershed erosion control among ethnic minorities, bank stability and flood control, irrigation modernization, crop diversification and fishery development in valley bottoms and lower slopes.
- The Se San/Srepok river basin between Cambodia and Vietnam. This activity will facilitate community based planning for balanced resource use between forestry, agriculture, fisheries and energy generation to facilitate an optimal sustainable resource use result for each country and will pay particular attention to poverty alleviation and food security among the inhabitants including the significant ethnic minorities in the area. Planning will consider socio-cultural traditions of ethnic minorities in forest, fish and other resource management.
- The Se Bang Hieng river basin (Quang Tri/Savanahket border region) between Vietnam and Lao PDR. This activity will address poverty alleviation and food security among the

ethnic and other people living in the area with the view of funding small agricultural, irrigation and forest activities that will enhance balanced resource use. A particular study will be made on the impact of rapid development of Asian Highway 9 on ethnic minorities in the area.

- The Theun Hinboun hydro-scheme area in Lao PDR. This activity will focus on developing irrigated agriculture and fisheries uses for damaging water outflow from this scheme, as an adjunct to and a more sustainable resolution of a resource allocation difficulty than the compensation measures being implemented.
- The Tonle Sap Great Lake region in general and/or the Strung Pursat region of Cambodia in particular. This activity will focus on integrated catchment management planning to promote balanced resource use, particularly between forests, agriculture and fisheries to safeguard the integrity of the Lake in the MRB as a whole.

It is noted that it may not be possible to begin in all of these regions in the short term.

**The expected benefits** include:

- Greater awareness of trans-border, across sub-basin and inter-sectoral impacts from agricultural activities in the Basin.
- Improved resource use planning and reduced environmental damage over time, particularly in trans-border and ecologically fragile areas.
- Improved capacity to promote sustainable forest management through market and other means.
- Improved communication and monitoring of resource use and trade (for example forests and forest products) between local government in sensitive trans-border areas.
- More development in sensitive border areas where lack of ability to allocate water or other resources has prevented economic development, particularly in isolated mountain areas occupied by ethnic minorities and other disadvantaged groups.
- Reduced negative impacts and enhanced more even benefits from resource use in trans-border and fragile sub-basin areas.
- Improved knowledge about the links between secure forestland use rights and sustainability.

**The activities** listed below are a combination of 9 PIN requests from the 4 countries to form a cohesive sub-basin watershed management process that will be commonly understood and can be implemented similarly in each country and trans-border area. The activities listed are confirmed at the regional workshop in October 2000. The specific trans-border and fragile areas are listed below under *target group*. It is expected that activities may be slow to start in some regions of particular sensitivity or security risk. The activities of the proposed Small Community Grants Scheme to be associated with this component are also discussed below. The activities specific to the Forestry Programme are from the Programme approved by the MRC Joint Committee in the past.

- Establishment of trans-border or trans sub-basin local government resource planning committees with transport, communications and office facilities, as on-going institutions, staff by line departmental and local government staff and other stakeholders including facilitators from MRC or NMCs and any relevant private sector participants (see organization and management below).
- The scheduling of an agreed programme of trans-border planning meetings including permission for facilitators and other foreign nationals to attend and cross-borders for these purposes initially for a 5 year period.
- The undertaking of study tours and exchanges with other catchment management groups within the Basin (such as in Thailand) or internationally to build understanding of catchment management planning processes.
- Establishment of sub-basin agricultural, forest, fisheries and natural species resources and services digitised maps, including development activities planned by others: from

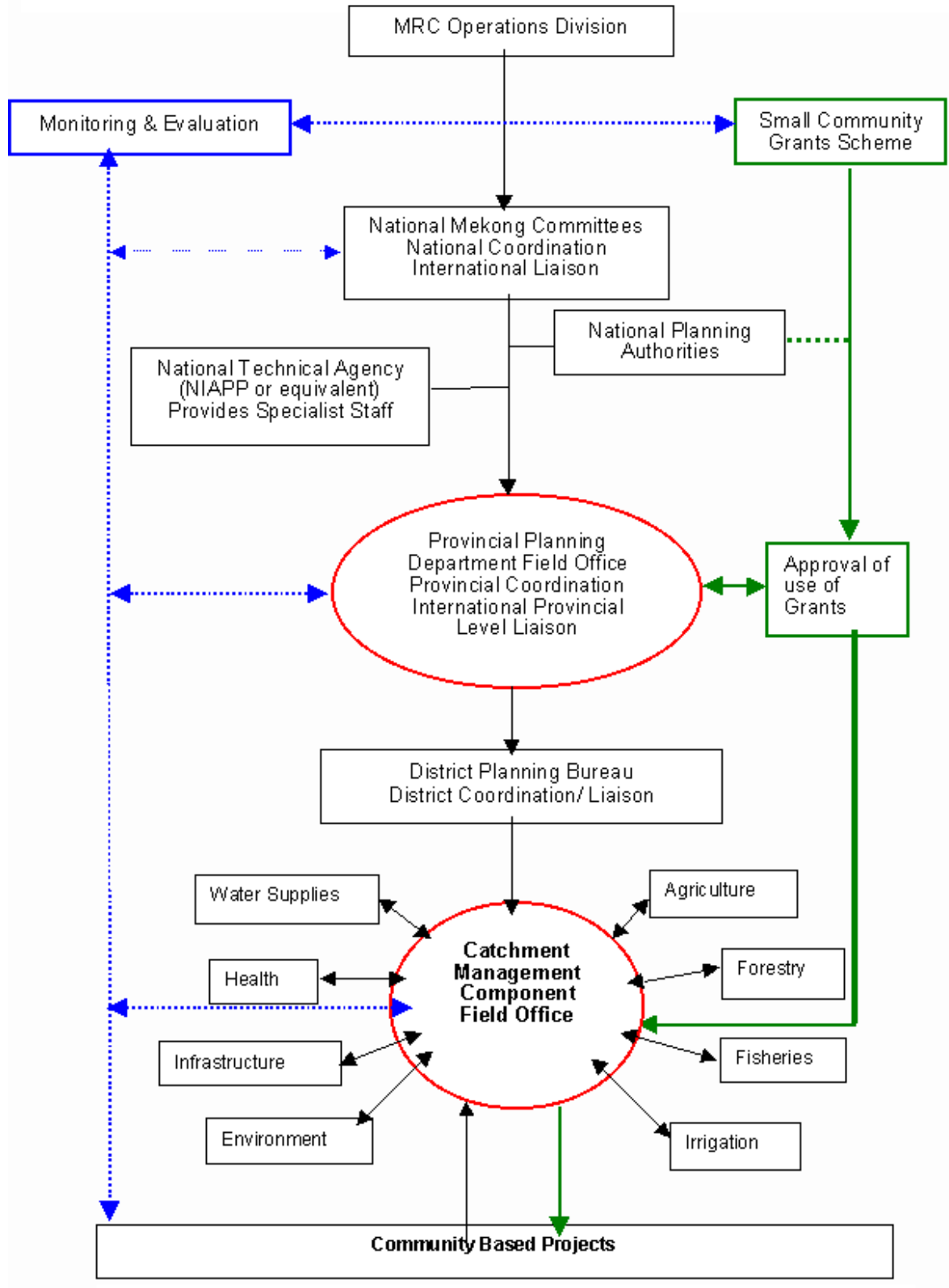
MRC, and local and other sources by desk study and field investigations.

- Establishment of a resource use (including forest and forest products) and cross-border trade monitoring system.
- The formulation of sub-basin watershed management plans that take into account the views and plans of all relevant stakeholders, the ecology of the region, and the communication of these to stakeholders.
- Facilitating community and other stakeholder formulation of specific funding requests to the MRC fund, donors or investors as appropriate.
- The implementation of a responsive monitoring and evaluation programme in accordance with the requirements of funding bodies and to enable the evolution of the management plan in response to experience in the Basin.
- A study of land, water and forest use rights.

***The organization and management*** of this sub-component, (see Figure 2) and the proposed Small Community Grant Scheme is intended to see most planning and expenditure occur in district offices with the support of provincial authorities under central government planning authority guidance, with facilitation and coordination from National Mekong Committees. Overall execution and coordination would be through the Operations Division in MRC Secretariat in Phnom Penh.

It is proposed that each riparian country would utilize staff of their line agencies from planning and interdisciplinary service units (such as the National Institute of Agricultural Planning and Projection (NIAPP) in Vietnam) to provide specialist staff for these district offices on a suitable contractual basis. The use of international consultants would be reserved for more complex studies, in service training, and for monitoring and evaluation. This policy may need to be reviewed during the first two years of the operation of this component depending on implementation success.

**Figure 2 Functional relationships in organisation and management.**



Note: Institutional arrangements will vary between riparian countries to suit local practice

It is proposed that disbursement of funds from bilateral agencies would be via the MRC Fund for consistency with small amounts. Larger investments or loan funds would have arrangements suitable for the donor or lender.

**Sub-component No. 6: Small Community Grants Scheme**

Activities proposed for this sub-component come from within the Secretariat. The ideas have been discussed in the second NMC meetings with each country, with some MRC Secretariat staff and some potential donors and lenders. The ideas have been discussed in some detail in the regional workshop in October and guidance given as to the variety of institutional arrangements that will be needed in each country. The idea was strongly supported as a means of addressing poverty alleviation and food security in isolated regions where it is now very difficult to deliver such assistance due to the small size of activities that these communities can effectively plan for and implement.

The provision of this grant scheme recognizes that

- Catchment management planning for agriculture and forestry are new concepts for these regions and may be confused with other national planning processes unless some tangible activities can result from the plans made.
- Investment funds are difficult to mobilize in these isolated regions in any case, particularly on the small scale that can be contemplated by local authorities.

The grant scheme is also intended to provide a convenient conduit for bilateral donors with small sums available for such objectives but not the means of reliably and economically planning or monitoring such investments in these remote areas.

Catchment management planning is essentially an interdisciplinary activity requiring attention in many areas. It is therefore intended the grant scheme and associated lending or investment might be directed to a wide range of activities including:

- Production related to agriculture, fisheries, and forestry.
- Local infrastructure, feeder tracks, water supply and sanitation.
- Environmental protection, erosion control, community awareness and participation in activities related to biodiversity and riparian ecology.
- Social interventions: health, vocational training and other assistance to the poor and ethnic minorities.

To qualify for grant support it will be necessary for applicants to show the activity will contribute to economic and environmental well being in these regions. It is proposed that any operational unit of the MRC, as mutually agreed, might utilize the scheme. It is proposed that the scheme would provide grants of a size that can be planned and administered at local levels, with sums smaller between about USD50,000 and (exceptionally) USD 250,000 per project.

**The activities** proposed for the grant scheme include:

- Providing a prospectus outlining the small grants offered and procedures to be followed to access these.
- Responding to requests in the form of appraisal reports and accounts of small grant decisions taken.
- Publishing accounts of the scheme including evaluated results for the riparian countries and donors or lenders.
- Ensuring that agreed operational planning and monitoring and evaluation procedures are followed and that operations are transparent and accountable to stakeholders.
- Facilitating access of communities involved in catchment planning to other small grant schemes, such as embassies, bilateral programmes and charitable bodies.
- Facilitating the involvement of lenders such as the ADB and the private sector to invest in these trans-border and fragile regions in a balanced way to the benefit of the community, the specific country and the Basin as a whole.

### 3.3 Component C - MRC Capacity Building

**The objective** of this component is to develop the capability of MRC (including the NMCs and concerned line agencies) to facilitate sustainable use of land and water for agriculture and forestry. The long-term regional perspective of a river basin requires capacity building in two directions that are mutually reinforcing:

- Building a professional cadre with the particular expertise and approach of a river basin commission in agriculture, irrigation and forestry.
- Improving the quality and ownership of shared knowledge about the sustainable use of land and water in the Basin.

**The strategy** is to facilitate the development of MRC as a 'learning institution' able to provide its member countries with an up-to-date understanding of the 'health' and sustainability of agriculture and forestry in the Basin and to assist in planning for long term development in the Basin. More specifically the strategy is:

- To build both the capability and standing of the MRC so that the member countries will increasingly choose to use the MRC to plan for resource development in the Basin and so meet MRC's regional goals.
- To improve links between MRC and relevant agricultural research, academic and development institutions in the Basin and internationally to further facilitate the evolution of a long term basin-wide perspective to the use of land and water for agriculture in the region.

**The rationale** for MRC to be involved in this activity is the normal requirement that institutions seek self-improvement in the face of changing circumstances. It recognizes the particular mission of MRC to facilitate cooperation in a constructive and *mutually beneficial manner* (from the 1995 Agreement) and that this is a different and complementary perspective that the short term focused perspective of particular line agencies that are involved in the different arms of agriculture. The riparian countries have expressed considerable interest in technical exchange between their countries and internationally and in collaborative efforts to gain a better understanding of the Basin's land and water used in agriculture, irrigation and forestry. They have also expressed interest in the provision of study tours for communities involved in catchment planning in cross-border areas. The component contributes directly to the achievement of goal 5 in MRC Strategic Plan mentioned in Section 2.1.

**The target group** includes MRC secretariat staff, staff and seconded officers in the NMCs, relevant line agencies and community representatives. It also indirectly includes opinion leaders and other influential people involved in agriculture in the Basin, both from within the region and in the wider world that has an interest in sustainable agriculture and food supply from the Basin.

**The expected benefits** of the component include an improved capacity to facilitate sustainable agriculture and forestry in the Basin and to mobilize resources towards this end.

#### **Sub-component No. 7: Scholarships, Technical Exchange and Conferences**

**The activities** proposed for capacity building originate partly from analysis of the ways in which the AIFP needs to contribute to MRC's capacity as a whole and partly from the proposals and ideas of Secretariat and NMC staff in the course of programme formulation. The activities proposed include:

- Scholarships for new riparian staff for AIFP to enter into an approved or customised Masters (or exceptionally PhD) programme in a relevant faculty where the Masters research thesis can be on a project or activity related to the AIFP. It might also relate to some important emerging concern such as research to estimating the economic value (replacement cost) of natural service, such as the service standing forests provide agriculture in the MRB in the form of quality water for irrigation. Successful applicants must be prepared to sign a bond to work with MRC for at least 3 years after completion of the degree.
- Provision of funds for riparian staff to attend relevant conferences and research exchanges in areas related to agriculture and river basin commissions.
- Provision of funds to support study tours by community representatives from fragile watersheds usually in cross-border regions.
- Provision of funds to recruit a consultative panel of prominent agriculturalists within the Basin and internationally and for the panel to meet on an AIFP activity site at least twice a year to discuss AIFP activities and issues.

### **Sub-component No. 8: Coordination of the AIFP**

**The activities** proposed for the management of the AIFP programme assume close cooperation with each NMC and that NMC staff will undertake most day-to-day coordination in each country. However a significant number of programme activities involve cooperation between countries and between different line agencies. This will involve MRC in an over-all coordination and liaison role, both between countries, and between the countries and interested donors, particularly those providing support to the proposed small community grants scheme. The activities proposed include:

- Planning and scheduling programme activities at a macro-level.
- Facilitating collaborative planning and management between the riparian countries in cross-border areas, in collaborative research, and in 'fragile' sub-basins requiring a more interdisciplinary approach.
- Facilitating the undertaking of catchment management planning in sub-basins where significant resource-based investments are likely that will impact on the farming community.
- Facilitating financial and activity monitoring, evaluation and reporting to the riparian countries and concerned donors as depicted in the organization and management chart below.
- Preparing an annual programme plan in consultation with NMCs.

## **4. PROGRAMME COST**

The total programme cost over 5 years is provisionally estimated to total USD 31.1 million include about 8 activities in 3 components. The details of these activities appear in the annexed report "AIFP Individual Activity Proposals". These activities have been endorsed in the regional workshop early in October 2000 where each country agreed to cooperate with each other country as proposed in the Programme. The timing suggested below is based on early commitment to funding, in practice it may vary, as the rate at which supporting funds will be mobilized is not yet clear. The cost estimates for each subcomponent are timed from the date funding becomes effective.

The cost estimates in these tables are appropriate to the degree of preparation planning undertaken to date and, consistent with practice in a programme approach, each activity includes an allowance for an inception period relevant to the complexity of the activity being planned. This is to enable the stakeholders who are to undertake the activities to finalise the inputs and activities they need to achieve the objectives according to the resources available.

It is to be noted that the riparian country interest in the Catchment Management component has been greater than might be achieved in the time and there may be access problems in some areas. Accordingly the budget estimates in this sub-component are based on starting in 3 of the areas requested by NMCs.

**Table 2: Programme Cost**

Components	Sub-components	Year One	Year Two	Year Three	Year Four	Year Five	Total
Water use efficiency	Paddy irrigation	683,760	952,380	830,280	781,440	842,490	4,090,350
	Upland agriculture	976,800	1,257,630	1,062,270	891,330	891,330	5,079,360
	Land and water resources inventory	549,450	830,280	1,123,320	1,098,900	1,098,900	4,700,850
	Multi-functionality of rice farming	419,291	415,140	415,140	415,140	415,140	2,079,851
Catchment management	Catchment management	1,245,420	976,800	1,428,570	1,282,050	1,489,620	6,422,460
	Small community grants scheme	300,000	420,000	680,000	660,000	1,260,000	3,320,000
MRC capacity building	Scholarships, TA, and conferences	744,810	769,230	769,230	647,130	402,930	3,333,330
	Coordination of AIFP	366,300	390,720	439,560	439,560	439,560	2,075,700
<b>Total (USD)</b>							

The programme proposed is for the period 2001 and 2005, however the Programme does not have a fixed end-point, since agriculture, irrigation and forestry issues will remain a core area for the MRC while ever agriculture remains the most significant industry in the Basin and agreed activities that cannot be started according to this schedule will continue into the next 5-year budget period.

## 5. PROGRAMME IMPLEMENTATION

### 5.1 Requirement for Flexibility

As noted elsewhere and as its mission is interpreted now, MRC is not a general-purpose development agency for its members. It is receiving support as an internationally significant river basin commission as discussed in Section 1. However many general development activities have impact on the 'health' of the Basin and some can be harnessed to help in meeting urgent needs. For example, many development agencies have a general focus on poverty alleviation and food security and, as noted in Section 1.3, poverty is a factor in ecological stress in many areas.

If MRC, working with relevant national authorities and bilateral agencies, can focus the attention of poverty alleviation activities in critical areas then it will be meeting its mission. This can include the employment of successful strategies or the facilitation of access to small grant and funding schemes through embassies and development agencies. Another issue is the opportunity for private sector involvement. Since the end of the 'cold war' transfers of technology and capital between OECD countries and developing countries has increasingly occurred through a combination of development assistance and private capital.



MRC can play an important role in mobilizing capital into new economic activities in the Basin where these can make a fundamental difference to sustainable agriculture in the Basin, such as in plantation forestry in critical areas now deforested. Achieving effective participation in many areas can benefit from the involvement of Non-government Organizations (NGOs)

## **5.2 Implementing Modalities**

For these reasons programme implementation will be flexible and allow for a range of modalities and funding mechanisms depending on the requirements of individual activities and donors. Interested development agents, such as NGOs and the private sector, may request MRC assistance. The MRC, in its turn could facilitate the involvement of the maximum number of implementing agencies where these can make an important contribution towards achieving the AIFP goal. In this regard MRC might act in coordinating, and instigating or facilitation role depending on the requirement of the particular funding body. It might act in a cooperative role where a specific basin need can be met within an activity with wider objectives funded by other agencies.

AIFP would seek long-term relationships with some suppliers where this makes use of and builds a basin capacity, such as the use of Asian Institute of Technology in Bangkok and other regional educational institutions to provide education and training under AIFP programmes. Another example would be to sponsor a network of relevant research institutes in the region for the purposes of data collection and applied research.

However, the normal approach of AIFP towards implementation would be to facilitate national line agencies or appropriate national research agencies to undertake activities on behalf of MRC for the ultimate benefit of communities in the Basin.

## **5.3 Funding Modalities**

MRC's normal funding modality is to provide grants where countries or communities have agreed to provide input. Many or most activities under AIFP would continue to be funded under grants emanating from others. Some 'core activities' might be contracted directly by MRC to relevant institutions, consultants, NGO's or communities. AIFP may, for example, cooperate with FAO/UNDP 'South-South' programme to facilitate the transfer of useful technologies between richer riparian countries and the others in the Basin. AIFP may become involved in facilitating loan funds from multi-financing institutions (MFIs) or capital from the private sector and then fund activities associated with the loan funds or capital. MRC would actively seek involvement with activities funded under the flexible lending facilities increasingly being offered by MFIs such as the World Bank. This is to enhance institutional learning and flexibility in implementation.

## **5.4 Cooperation with Other Units within MRC**

Agriculture has often been noted as an interdisciplinary activity. Sustainable catchment management principles require an interdisciplinary approach to planning and implementation. The AIFP involves elements of both planning and implementation and so will necessarily require interface with other activities and units within MRC. Interaction with WUP, BDP and the GIS database are discussed above and below and have been agreed within MRC and discussed in the context of specific activity proposals detailed in the Annex of this report.

Interaction with other specialized activities within MRC, particularly the Technical Support Division, would occur where information for planning required this. For example, AIFP needs to be involved in the estimation of the impact of 'trade-offs' between competing uses of water and land resources and in coordinated action where complementary use of resources is to occur. Other collaborative activities would occur where AIFP is in the best position to gather data for other technical units, such as the Environment Programme or where assistance from

another unit was necessary for some activity involving agriculture, e.g. to negotiate 'free passage' for inputs and outputs of agriculture or to improve associated navigation with the Navigation Programme.

A particularly important area of cooperation is with the WUP and the BDP process. Rules for the utilisation of water are being developed under the WUP based on an understanding of the mass balance of water source and water use and drainage so as to achieve a sustainable balance. AIFP has two important roles it can play as agreed in NMC meetings and the regional workshop in particular:

- A role to provide information on the evolving use of water in agriculture and movement through forests based on measurements and on the agronomic and socio-economic imperatives driving water use to both WUP and BDP.
- A role to investigate and test means by which the rules can be transmitted to water users at the field level, through incentives and other means to users such as water user groups.

Both of these would occur through the Water Use Efficiency component.

The Operations Division would coordinate this interaction as executing agent to ensure duplication does not occur and that integration is smooth. Actual cooperation would be negotiated on a needs basis as mutually agreed between the technical units.

## **6. MONITORING AND EVALUATION**

Monitoring and Evaluation under AIFP would be for three broad purposes:

### **6.1 Monitoring for Donors or Cooperating Agencies**

Each agency and member country has its own requirements for monitoring and evaluation. The AIFP would facilitate M & E for cooperating agencies as agreed in the documents covering the cooperation. This would be through the Public Information and Coordination section.

### **6.2 Monitoring for AIFP Programme Management**

Monitoring and evaluation would be a fundamental tool for AIFP programme management within the Operations Division. Responsive M & E is a term used for a system of monitoring that seeks to improve transparency and accountability between stakeholders, by including an M & E Agreement in all operational plans. Under this Agreement the stakeholders responsible for providing inputs to the activity under the operational plan would agree to meet periodically to assess progress, to challenge assumptions underlying the activity, to bring up and resolve all 'claims' about each other's performance. All 'concerns' about the activity and any 'issues' that cannot be resolved and so need to be taken up to higher authorities.

The proceedings and resolutions of M & E meetings would be taken as minutes and the minutes kept for inspection by line agencies, NMCs and MRC Secretariat staff. One duty under each agreement would be that a representative from one meeting must personally present unresolved issues to the next level of programme management. If not resolved at that level it would become the responsibility of a member of that meeting to present the issue higher, and so on until resolution.

### **6.3 Benefit Monitoring for MRC**

Benefit monitoring under AIFP would be according to the logic of the Activity Logframe by the Natural Resources Planning Division. The Division would undertake benefit monitoring of AIFP as a whole against the Logframe set out in table 1 to facilitate long term planning.

## **7. RISKS AND ASSUMPTIONS**

The risks to the AIFP are that the assumptions underlying the Programme Logical Framework prove to be unfounded. These assumptions would be 'tested' during periodic responsive M & E as discussed above.

A key assumption behind the AIFP is that each member country and eventually the observer countries continue to see value in cooperating in agriculture and irrigation through MRC. This translates into risks that MRC countries may not facilitate the provision of needed data and other inputs needed for sensible planning for agriculture, irrigation, and forestry. They may, for example, change their policies and regulations or reduce their input in cash and kind.

Another key assumption is that poverty alleviation in critical areas can be addressed so that the Basin retains ecological integrity under population and other pressures. A subsidiary assumption here is that ethnic minorities and other possibly dis-empowered groups are able to and do participate in programme activities in critical areas.

Another important assumption is that different disciplines and line agencies in each MRC country and in MRC cooperate sufficiently for the interdisciplinary requirements of sustainable catchment management to be achieved.