MRC NAVIGATION PROGRAMME

Component 1: *Socio-economic Analysis and Regional Transport Planning*

Mekong River Commission

December 2003

Final Report

PREFACE

The Mekong River Commission is pleased to present the MRC Navigation Programme.

The countries in the Mekong region have used the extensive natural river networks for transport and trade for centuries. For many years the Lower Mekong Basin hosted traders from near and faraway becoming important trade partners in the Southeast Asia region and beyond. Nowadays, there are only few regional and international traders travelling the Mekong waters meaning that the extensive navigation and trade potential is far from utilized.

The Mekong River flows through six countries and is an important gateway to trade centres in the Southeast Asia region and beyond. To fully realise the trade and transport potentials a regional development approach is very much needed.

The 1995 Agreement gives the Mekong River Commission (MRC) a special mandate to promote freedom of Mekong navigation. Over the years, MRC has implemented important navigation projects but due to new developments in the region it was decided that the Mekong River Commission should update the strategic documents underpinning navigation activities; hence, a new MRC Navigation Strategy and Programme was formulated.

This new Navigation Programme consists of five components to be implemented over six years (2004-2009). The programme aims at *"promoting Freedom of Navigation and increase the international trade opportunities for the MRC Member countries' mutual benefit, and to assist in co-ordination and co-operation in developing effective and safe waterborne transport in a sustainable and protective manner for the waterway environment"*.

In improving regional navigation in the Lower Mekong Basin, the MRC will seek to develop national and regional waterway management capacities within the national line agencies, ports and waterway administrations, and decisive steps will be taken towards establishing close partnerships between public and private stakeholders. MRC applies a holistic and integrated approach to navigation development where environmental, social, economic and technical aspects are well balanced to accommodate the need for development while ensuring that development takes place in an ecological sustainable manner.

Regional trade does not only bring about income, local employment opportunities, and investments in new technologies. Trade relations will foster better understanding among different cultures, methods and thinking that can lead to innovation in sectors and areas that are not directly related to the actual exchange of goods and services. Efficient and successful implementation of the suggested outputs and activities in this Navigation Programme is intended to strengthen planning and management capacities within the regional navigation sector and allow the countries in the Lower Mekong Basin to augment the benefits from increased regional and international trade and transport.

The MRC Navigation Programme has been formulated in close cooperation with MRC member countries and regional development partners through a participatory process of national and regional consultation visits and workshops. By presenting this programme we are looking forward to work even closer with international, regional and local navigation partners and stakeholder.

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SUMMARY OF C1 - SOCIO-ECONOMIC ANALYSIS AND REGIONAL TRANSPORT PLANNING

Objectives:

The development objective of the MRC Navigation Programme (NAP) has been defined as *"to promote freedom of navigation and increase the international trade opportunities for the MRC member countries' mutual benefit, and to assist in coordination and cooperation in developing effective and safe waterborne transport in a sustainable and protective manner for the waterway environment."*

The immediate objectives of this component are to:

1. assess the socio-economic outcome of enhancing navigation on the Mekong River;
2. examine and propose cost-effective and practical ways in which cargo and passenger transport on the Mekong waterway network can be increased as a separate transport mode and as a part of the regional multimodal transport network;
3. provide a feasible and competitive scheme for regional navigation development to target investment;
4. assist in developing rural waterborne transportation to improve access to markets, schools, hospitals transport in remote areas and to improve navigation during floods; and
5. protect and promote the interest of the people who live directly by the river (e.g. bank erosion)

Context and Problem Analysis

Waterborne transport on the Mekong River has always been a basis for economic development in the Lower Mekong Basin (LMB) and has also played major role in the economic development and integration of LMB as a whole through the facilitation of international transport. This component will formulate a regional master plan to determine where and how to improve stretches of the Mekong River that have great potential to attract more trade and traffic. This study will identify an optimal fit of the waterborne transport sector with other transport modes and links to achieve the most cost-effective regional transport system. In addition to regional commercial trade, the prospects for developing waterborne transport to rural and remote areas will be examined, assessed and improved.

Justification

The Mekong waterway is presently under utilised and, to fully realise the trade and transport potential, a socio-economic and technical feasibility study for improving waterborne transport on the Mekong is required. If its potential is to be developed, inland waterborne transport and maritime access must be part of an integrated transport system comprising all modes. Due to lack of data, a comprehensive baseline study is necessary to justify and promote investments in the waterborne transport sector.

Relationship to the MRC Navigation Strategy and MRC programmes

The MRC Navigation Strategy has clear indications that member countries wish to see the MRC as a visible partner in regional transport planning and assist them in realising their navigation potential. The countries are aware of the potentials and of the impediments but it is difficult for them to meet the challenges on their own due to lack of capacities, financial means, and reliable data. The scenarios and studies from this component will be valuable tools for the countries to also address navigation impediments nationally and will give them an opportunity to be better prepared for regional and international trade integration.

This component will mainly provide input to the Basin Development Plan (BDP) and the Water Utilisation Programme (WUP). These inputs will consist of data and scenarios showing the comparative advantage of the waterborne transport sector and its integration into multimodal links. The studies will also provide a better insight into the expected scope of future navigation activities

on the Mekong, thereby suggesting requirements for Least Available Depth (LAD) and minimum flows.

Expected Outputs/Activities:

Outputs	Activities
Subcomponent 1: Regional Master Plan For Navigation	
Output 1 **Traffic and trade scenarios**	Activity 1.1 Collection and analysis of data and information Activity 1.2 Evaluate national transport development strategies and master plans Activity 1.3 Field studies Activity 1.4 Comprehensive supply-demand analysis for waterborne cargo transp. Activity 1.5 Qualification and quantification physical requirements Activity 1.6 Study on the optimum accessibility for member countries to regional and international maritime and inland navigation and waterborne trade. Activity 1.7 Supply-demand analysis for waterborne passenger transp. and tourism Activity 1.8 Supply-demand analysis for rural waterborne transport
Output 2 **Master plan for regional (intermodal) waterborne (cargo, passengers and tourism) transport and development of rural water transport**	Activity 2.1 Develop cargo scenarios for the development of waterborne transport Activity 2.2 Schematise the intermodal regional transport network Activity 2.3 Development of strategic regional intermodal transport model Activity 2.4 Modal split analysis Activity 2.5 Scenarios based on different sets of Least Available Depth (LAD) Activity 2.6 Develop waterborne transport development scenarios Activity 2.7 Waterborne passenger transport Activity 2.8 Strategy to stimulate growth of the cross-border waterborne tourism Activity 2.9 Identify areas where rural waterborne transport is used and develop specific scenarios for at least four areas Activity 2.10 Develop specific strategic approaches in line with national policies Activity 2.11 Carry out EIA and SIA for regional waterborne transport Activity 2.12 Carry out economic and financial evaluation of scenarios Activity 2.13 Carry out an economic analysis for each member country to assess the impact of the proposed activities and its effect on regional and rural private-sector development Activity 2.14 Assess the financial and economic benefits in scenarios of improved rural waterborne passenger transport Activity 2.15 Determination of the Optimal Mekong Navigation Scenario and Least Required Depth (LRD) Activity 2.16 Identify investment opportunities to develop waterborne tourism for both the public and private sector Activity 2.17 Identify investment opportunities for improvement of national and cross-border waterborne passenger transport systems Activity 2.18 Identify investment opportunities for both the public and private sector for improvement of rural waterborne transport development
Output 3 **Evaluate the socio-economic outcome of the development of both regional and rural waterborne transport**	Activity 3.1 Identify relevant social/cultural indicators to design baseline survey and monitoring system for the social impacts of the Navigation Program. Activity 3.2 Design and conduct comprehensive social and cultural baseline study Activity 3.3 Use the baseline study to identify urgent issues in relation to navigation with regard to poverty, access to economic resources by women and the use of country craft during flooding Activity 3.4 Develop specific strategies for each of the member countries, based on the outcome of the baseline survey, to support small-scale activities related to the development of rural waterborne transport, specifically targeting vulnerable groups Activity 3.5 Develop a clear framework for Social Impact Assessments as in use by the World Bank or the ADB for the implementation of all activities of the NAP.
Output 4 **Formulate recommendations for prioritised investments in the inland waterway infrastructure**	Activity 4.1 Investment opportunities in regional waterborne transport Activity 4.2 Investment opportunities for regional passenger transport and tourism Activity 4.3 Investment opportunities in rural waterborne transport Activity 4.4 Prioritisation
Output 5	Activity 5.1 International finance institutes and bilateral donors Activity 5.2 Public-private partnerships

Identify sources of finance for the recommended investments	
Subcomponent 2: Supporting Projects	
Output 1 **Master Plan for Mekong Navigation in Cambodia**	Activity 1.1 Rehabilitation of IWT in Cambodia Activity 1.2 Access for ships to Cambodia via Mekong and Bassac rivers Activity 1.3 The potential for multi-modal access to southern Lao PDR Activity 1.4 Training requirements
Output 2 **Improvement of the navigation conditions on the Mekong River in Viet Nam**	Activity 2.1 Study component Activity 2.2 Concrete Activities Component
Output 3 Pilot project in the Lao PDR: i**mpact of morphological changes and sedimentology on the navigation operations and infrastructure** **Impact of the navigation operations and infrastructure on morphological changes, including bank erosion.**	Activity 3.1 Detailed (geo) morphology study Activity 3.2 Mitigation measures. Activity 3.3 Improvement measures
Output 4 **Pilot Projects on tourism and Navigation**	Pilot project 1: Development of cruises from Bangkok[1], Ho Chi Minh City, Phnom Penh to Siem Reap and Angkor Wat Pilot project 2: Development of waterborne tourism from Luang Prabang to Simao
Output 5 **Institutional strengthening, capacity building and training**	Activity 5.1 Workshops Activity 5.2 On-the-job training of the permanent staff assigned to and responsible for the implementation of the component Activity 5.3 Preparation and issuing of training materials and guidelines of the various workshops and seminars Activity 5.4 Identification of the needs for institutional strengthening, capacity building and training of the line agencies, stakeholders and beneficiaries in each of the member countries, Activity 5.5 Identification of the need for further development of education and vocational training institutes and facilities in each of the member countries regarding socio-economic analysis and planning of waterborne transport

Time frame: 5 years (2005-2009)

Costs Sharing:

Total project costs	USD	4,230,000
National inputs (in-kind)	USD	187,320
External funds required	USD	4,042,907
Funds pledged (Belgium)	USD	1,473,500
Funds sought:	**USD**	**2,569,407**

[1] Bangkok - Mekong estuary by sea

1. BACKGROUND

1.1 Context

The Mekong River flows through six countries and is an important gateway to trade centres in the Southeast Asia region and beyond. To fully realise the trade and transport potentials, an in-depth socio-economic and technical feasibility study for improving waterborne transport on the Mekong is required. Determining the optimal inter-modal nodes and links between the waterways, ports, roads and rail is vital to improve the cost-effectiveness of the regional transport system. In line with the viability assessment, the component will formulate a regional master plan to determine where and quantify to what extent the different stretches of the whole Mekong River System will be improved.

Besides the importance of regional commercial trade, the accessibility to rural and remote areas will also be examined, assessed and improved. That is why this component also concentrates on more social issues such as rural transportation and basic infrastructure, poverty reduction and gender development.

This component will provide the most important inputs to the MRC Basin Development Plan.

1.2 Problem Analysis

Regional waterborne transport

Waterborne transport on the Mekong River has always been a basis for economic development in the Lower Mekong Basin (LMB) and has also played major role in the economic development and integration of the LMB as a whole through the facilitation of international transport.

A common interest in increasing international trade – and the vision that enhancing navigation on the Mekong is one way to achieve that – is the underlying reason why member countries opted for a separate article on freedom of navigation in the 1995 Agreement (Article 9).

Navigation on the Mekong provides economic diversification, an alternative and complementary mode of transport, employment opportunities and the potential to improve balance of payments..

The public and private sectors are interested in further developing navigation on the Mekong River because of its large cargo capacity as well as its potential to relieve road and rail congestion and maintenance. The benefits are not only associated with increased opportunities for (inter) national trade, but also with the development of (inter) national tourism and related employment.

While preparing the MRC Navigation Strategy, it was acknowledged that serious constraints prevented the full socio-economic benefits of enhancing Mekong navigation from being assessed. These constraints refer to:

- very little reliable data on the cargo and passenger demand and transport master planning[2];
- lack of awareness among decision-makers on the importance of river navigation and therefore a lack of budget provisions or waterborne infrastructure;

[2] The LMB line agencies largely lack comprehensive and up-to-date records of passenger and cargo traffic plying the river and its associated waterways. As a result, estimates of traffic volumes had to be made from a variety of different sources. In some member countries (notably in Lao PDR and Cambodia), much of the authority for vessel licensing and port operation has been decentralised to provincial offices, and with it, the responsibility for record-keeping. In most cases, records are manually maintained and provincial staff are under no obligation to submit returns on a regular basis to line agency head offices.

- poor reliability of the waterborne transport services due to physical and non-physical barriers;
- lack of availability of regional and national transport master plans; and
- distorted transport markets when considering (a) resource costing based on total and external costs associated with transport, (b) cargo allocation practices and (c) attention paid to programmes for road and rail transport development

By promoting the development of waterborne transport, the MRC must also take into account the social impact of increased river traffic and seek to mitigate the negative impact that this may bring. This means that attention will be given to social concerns across all components of the Navigation Strategy as a cross-cutting issue. Specific socio-economic indicators will have to be developed to assess and evaluate the impact of the navigation development on all stakeholders using the river, particularly the poor.

To make the inland waterway network more accessible to river-sea traffic, it is necessary to improve the waterways concerned in such a way that they can be used by inland water vessels with a draught of at least 2 meters for not less than 300 days a year. Sea-river vessels, because of their dimensions, require more depth (5 meters) and therefore can only use a limited portion of the inland waterway network to reach a certain number of river ports. Existing technologies should be adopted in the LMB to increase the geographical scope of river-sea transport, e.g. barge-carrier technologies.

There is an urgent need in the LMB to draw up an up-to-date exhaustive inventory of bottlenecks, specifying the nature of works to eliminate them and the way these could be financed. The MRC Navigation Programme and Action Plan could formulate activities to draw up an inventory of bottlenecks to be proposed to governments and donors.

Governments and National Mekong Committees should be encouraged by the MRC to prepare proposals on how to carry out the inventory on their respective segments of the inland waterway. It is recommended that the MRC coordinates these activities.

Most of the obstacles[3] to the development of river-sea transport are neither difficult nor expensive to solve. With custom procedures, for example, maritime ships entering the inland waterway network on their way to an inland port have to undergo several customs clearance formalities, even if they have loaded their cargo in another LMB country. This causes increased costs, not only because of the interruption of the voyage but also because extra fees have to be paid. It also gives river-sea transport a disadvantage when carrying out transport within the LMB (Viet Nam and Cambodia) as compared to the other modes that do not have to bear such extra expenses. It was felt that the system should be changed to allow for customs clearance at the (inland) ports of loading and unloading.

Passenger transport and tourism

Cross-border passenger transport on the Mekong is very limited. At the national level, only in the Mekong delta [4] does a well-developed system of passenger transport exist. In the Lao PDR, a regulated system is not really in place, although passenger traffic by boats is

[3] Cross-border trade from foreign vessels is being hampered by

- *operational and administrative shortcomings* (there is no harmonisation on formalities and procedures for vessel entry and departure, custom clearances, immigration and quarantine, no assignment of responsibilities for maintaining the fairway, no night navigation, sedimentation and shoaling, …),
- *causes for accidents* (no common navigation rules and regulations, no common guidelines on carriage of dangerous and noxious goods, no co-ordination on salvage, …),
- *A lack of co-ordination on safety and environmental matters:* (no search and rescue, no common prevention of oil pollution by ships*)*.

[4] Annually about 73 per cent of the region's cargo tonnage and about 27 per cent of its passengers travel by water. Passenger vessels in the delta of Viet Nam (licensed to carry from 20-150 passengers), numbered 7,519 units, or 13 percent of the registered fleet. (Viet Nam National Statistical Yearbook, 2000)

important[5]. In the MRC member countries, there is little attention from policy makers on the role that passenger transport plays. It is often left out of transport planning, and its importance to people in remote areas is forgotten. In the Upper Mekong in Lao PDR and Thailand, some regular passenger routes are plied. These systems are not linked. At some places (the Cambodian-Vietnamese and Lao-Thai border ports), immigration officers are present, mainly to facilitate tourists. In some stretches of the river, tourism and passenger transport seem to be combined, generating what is thought to be substantial traffic flows.

During the formulation of the Navigation Strategy, it become apparent that there was a lack of data to estimate the number of passengers on the Mekong, be they tourists or local people who use the river for regular travel. Data for this type of riverborne transport could be important for developing the master plan and private-sector activities linked to waterborne transport. Tourist routes could be developed to areas of cultural and natural interest, developing local economies which will benefit the poor.

There is a huge potential for waterborne tourism, even eco-tourism. However its early implementation is becoming a matter of concern. Some new international traffic opportunities – such as a tourist boat service between Siem Reap and Ho Chi Minh City – is being delayed by the absence of an enforceable agreement between the two countries. The port facilities, however, will be there such as in Ho Chi Minh City, Phnom Penh Port and the recent plans for improving Chong Kneas port on the Great Lake near Siem Reap and the Angkor Wat temple complex. The potential for the Lao PDR is certainly there but not so many ports or landing areas are adequate enough to accommodate tourism. And, of course, the tourist industry needs a high degree of reliability and safety – and this is also a matter of concern[6].

Rural waterborne transport

River navigation provides a cheap mode of transport for remote areas, offering communication to the rural population for transportation of agricultural produce and other goods to and from centres of consumption. Support for local rural navigation offers an opportunity to reduce poverty and promote gender development. However, this support is at the moment largely lacking. During the development of the Navigation Strategy, it became clear that the role played by local and rural waterborne transport in the lives of many people is forgotten by both policy makers and donor communities.

Direct poverty reduction could come about by focused support to the problems faced by the communities in the Mekong River Basin. Initial analysis of the rural transport system along the Mekong shows that many communities – mostly poor and rural – rely heavily on small country craft and ferries to go to work and school, visit markets and access social services and natural resources. Despite this long navigation tradition and culture along the Mekong, no focused support is provided for local transport needs. Most policy makers and planners are land based and lack the understanding of the amount of time spent by people working and traveling on the water. For country craft, major problems outside the main waterway include obstacles like low bridges and water-management structures, badly-maintained small channels and canals, low boat speeds and a lack of money and credit for maintenance and building new boats. At the same time, the price of wood – the major construction material for country craft – is rising rapidly, calling for innovative ways to use scarce resources and introduce new materials and technologies. Furthermore, the introduction of new and appropriate technology should focus on improving the use of vessels during floods as well as improving the neglected safety and working conditions on board and in ports. While women and men seem to be using rural transport, little structured information is available on the division of labor on boats and access to resources by both sexes.

[5] At the end of 2000, the IWT fleet of Lao PDR totaled 1098 boats, of which 405 (37 percent) were cargo or multi-purpose boats, and 693 (63 percent) were passenger-carrying boats.

[6] Except for the latest range of vessels, the passenger-tourist boats between Phnom Penh and Siem Reap are high speed vessels fitted with a hull of 2 mm thick to be light and fast. Of course accidents and loss of life is bound to happen if correct safety and ship building rules are not applied and enforced. The same goes for the very loud and powerful car engine driven speed boats in the upper Mekong river in the Lao PDR.

Anyone traveling along the Mekong can see the importance of the river banks to small farmers who use the land when the water level drops. Although farming on river banks can be seen as one of the factors contributing to increasein bank erosion, farmers lack the means to mechanically pump water and need to grow their crops at walking distance from the water. Induced erosion is therefore another issue that needs attention, specifically in relation to plans to increase navigation and have faster boats generating bigger waves.

The social impact of bank erosion and subsequent loss of land can be quite severe. It must also be recognised that hydraulic works – such as river training works for navigation improvement – may alter the geomorphic regime of the river and significantly aggravate erosion. Since river flow and morphology are dynamic phenomena, river management and protection/regulation works cannot be carried out successfully without a good scientific understanding of the fundamental problems to define the adjusted corrective measures.

It is currently unclear to what extent country craft navigation is linked to regional navigation. This is partly due to the limited knowledge about how rural waterborne transport is working. We don't know the type of cargo and destinations of small country craft. Only in the Mekong delta is the feeder function of rural transport known to be firmly linked to the regional waterborne transport system. More information is therefore needed to identify links between the rural waterborne transport system and regional river-based transport.

The Mekong is thought to form an important avenue for private-sector development that could be stimulated by improved navigation. The current lack of credit, economic-diversification strategies and supportive policies are major impediments to informal economic activities. The Navigation Programme (NAP) creates an opportunity for the MRC to focus on building the missing links between public and private interests in order to stimulate economic activities for sustainable growth.

Limited availability of socio-economic and cultural data at both the village and macro levels was a serious constraint during the formulation of the NAP, hampering efforts to assess the economic benefits to poor users of the river as navigation develops. Furthermore, little is known about economic activities related to waterborne transport that are required to formulate a coherent support program for private-sector development. These constraints include:

- lack of data on how poor people use the Mekong and its tributaries for rural navigation, their craft and transport purposes;
- lack of clearly-defined socio-economic and cultural parameters by each of the riparian countries against which impact and development can be measured;
- uncertainty over the role of different groups (gender/social strata) in relation to navigation, accessing natural resources and economic activities along the river; and
- limited information on the river's natural and cultural resources forming the basis for tourism.

Although there is overall agreement of the Mekong's importance to rural communities, only a few small-scale studies have been carried out to investigate the actual use of the river. This seems to be an important activity where the MRC could assist in advancing and capturing the full complexity of the socio-economic and cultural use of the Mekong. At the same time, there is a big need to form a better picture of private-sector development opportunities and for policies to suppose such enterprises.

This component of the NAP could facilitate interventions in rural waterborne transport targeted at overall economic growth, poverty reduction and gender development. Measures linked to rural transport that could be developed under the programme will have a positive effect on:

- labour generation;
- income generation;
- gender development;
- access to natural resources;
- access to markets;
- access to social provisions such as (floating) schools, health clinics and aid projects;

- attention towards “water culture” among land-based policy makers; and
- local tourism.

1.3 Cross-Cutting Issues

Links with the other components

The Socio-Economic Justification and Regional Transport Planning component is strongly linked to all of the other components of the Navigation Programme.

- Links with C2: *Legal Framework for Cross-border Navigation*. Component 1 will provide certain outputs which will be crucial for incorporation into the navigation agreements: (i) the results of technical feasibility studies will include the identification and removal of physical (and non-physical) barriers. These barriers and their mitigation or reduction will need to be incorporated into the legal framework. (ii) Another output will be the Determination of the Optimal Mekong Navigation Scenario and Least Available Depth (LAD). These reference river depths will be specified in the agreements – the countries will then have the obligation to maintain this river depth either by dredging or river training works if the available water level is not enough for shipping (iii) the scope of the legal activities will depend on the outcome of a number of economic analyses. For example, there will only arise a need for legal principles for freedom of navigation on the Bassac if it is found out that this branch can and should be used for international navigation. In C1, a study will be made to make a comparison between economic and physical accessibility of the Mekong and Bassac rivers.

- Links with *C3: Traffic Safety and Environmental Sustainability*. (i) In order to study the feasibility of waterborne transport in certain areas in the basin, not only the economic viability but also the technical achievability will be studied. This technical achievability will involve a study on the identification and removal of the physical (and non-physical) barriers which are balanced against the environmental impacts. The results of this investigation will then be used to identify a number of environmentally-sound investment projects that will be incorporated into Component 3 to improve the efficiency and safety of (preferably cross-border) navigation (2) Besides removing the constraint that will start in Component 2 and Component 3, there are a number of measures to improve the navigation services and infrastructure. Component 1 will formulate recommendations for prioritised investments in the inland waterway infrastructure (regional, rural, tourism, etc.) and Component 3 will start with the implementation of certain recommendations, initially with soft infrastructure aspects.[7] (iii) Another activity that will feed into the third component is the Environmental Impact Assessment (EIA) and Social Impact Assessment (SIA) for the development of regional waterborne transport. The EIA and SIA will be carried out for alternative scenarios for the development of waterborne transport and for the impacts of increased waterborne cargo, passengers and tourism.

- Links with *C4: Information, Promotion and Coordination:* As data collection was identified as a major restriction to assess the socio-economic justification for navigation, the most important input derived from this component will be the data and information. The establishment of the NAP Management Data Reporting System will provide all the economic and operational data required for the feasibility study and master plan. Without promotion and coordination, it will not be possible to balance the development of the waterborne transport system in the LMB. Developing and maintaining the River Information System will enable shippers to plan their voyages and avoid the risks of grounding because of insufficient water depths. Together with the installation of aids to navigation as one of the outputs of this component, concrete actions are being taken to improve the use of the waterways. One of the problems described in this component is the lack of awareness of the advantages of IWT and the opposition to inland waterway projects by environmental groups because of a lack of understanding. A sound

[7] However some "hard" infrastructure activities will start already such as the installation of aids to navigation (buoys, beacons, channel markers) because these are indispensable projects to guarantee safety and to avoid collisions and risks for pollution.

public participation strategy will be developed in component 4 which will enable governments, local populations, engineers, planners and civil society to work together on navigation improvements.

- Links with *C5: Institutional Development:* Proper implementation of the Navigation Programme through a well-organised and efficient structure is a primary condition for success. Component 5 will lay out the institutional requirements for implementing this component. Correct operation of the four components leads directly to institutional development of the countries involved. See Chapter 4: *Management and Implementation.*

Links with the other MRC programmes

Successful implementation of this component requires concerted action and coordination with a selection of other MRC programmes and projects.

The Basin Development Plan (BDP) is a framework and a process to support overall development planning in the Lower Mekong Basin related to water resources. The planning format is the so-called sub-areas that divide the basin into 10 distinct geographical regions with different characteristics, resourcesand development opportunities. Outcomes of the sub-area studies conducted by the BDP will be available in early 2004 and are expected to be inputs to consider while doing the overall baseline study of the navigation sector. This baseline survey and the scenarios formulated within this component will be important inputs to the BDP process in defining the river stretches where development of navigation, commerce and tourism in particular should be promoted to achieve broad-based economic development.

The BDP is also concerned with public participation and the impacts of Mekong development on local people and market structures. It would be beneficial for the NAP to work closely together with the BDP on approaching these issues in this component and Component 4. The regional SEA and EIA for navigation development would be inputs to be used by BDP in this regard, whereas the BDP will be able to supply this component with information on other development activities that might have an impact on or feed into regional and/or rural navigation development.

The Water Utilisation Programme (WUP) is expected to be provided with information on the expected use of the Mekong for transport and traffic purposes, and the Least Available Depths (LAD) to be guaranteed by the MRC member countries. The WUP is using modelling systems to reach the expected LAD, and the NAP could supplement these theoretically-derived figures with real-time data on actual uses and LAD needs along the Mekong. The maintenance of the waterway is a responsibility to be shared by the member countries and common rules for the use, maintenance standards and monitoring are to be developed by WUP working groups. This work will need to be coordinated with the NAP, particularly with this component and Component 2 on the legal framework for navigation.

The main focus of the Environment Programme (EP) is to strengthen environmental management systems and monitor the state of the Mekong environment. The EP is also taking the lead on formulating a transboundary Environmental Impact Assessment (EIA) system to be used by all MRC member countries. This component will produce a regional EIA and SIA for regional navigation development. These studies will give guidance on the environmental and social impacts on river communities to be expected from navigation development. Through consultation with the EP and the MRC member countries, it should be possible to draw up suggestions for how to mitigate and limit such negative impacts.

Other MRC programmes will have links to this component, but to a much lesser extent and on an ad-hoc basis. The planning of regional navigation development will need advice from the sector programmes on specific matters to be taken into consideration to take an integrated and holistic approach to develop the Mekong Basin. Such inputs could come from the

Fisheries Programme, the Flood Management Programme, and the Agriculture, Irrigation and Forestry Programme.

Other modes of transport

Inland waterway transport is not a stand-alone transportation system, but needs to be integrated into the total regional transport system. This is also true for the more local (national) transport networks. Development scenarios and plans for the road and railway networks should be assessed in conjunction with the development of a regional waterborne transport master plan and tariffs that allow for competition.

National poverty alleviation strategies

One of the outputs of this component is a regional Master Plan. This plan will draw on Poverty Reduction Strategy Papers (PRSP) where available to establish links to the priorities set by riparian countries to fight poverty at a national level. Using PRSP priorities also allows to line up activities with the overall strategy of the development banks, multilateral agencies and important bilateral donors which helped formulate the strategy papers.

The NAP could also be an important input to the ongoing development of PRSP and ask for more attention to regional and rural waterborne transport in reducing poverty in member countries. This important advocacy and coordinating task could be picked up by MRC Secretariat.

2. JUSTIFICATION

2.1 Relevance of waterborne transport development

Inland waterway transport is part of a multi-modal system. At present, the Lower Mekong Basin waterway network is insufficiently used although it has a great reserve capacity. If its potential is to be developed, inland waterborne transport and maritime access must be part of an integrated transport system comprising all modes. So at the policy level, an inter-modal approach is called for. As the waterway network does not cover all the important economic regions in the LMB and the Greater Mekong Subregion, there must be multi-modal terminals connecting the waterway network to the road and rail networks where goods can efficiently be transferred between modes. Line agencies and international organisations should foster the establishment of such terminals. Another way to exploit the potential of inland waterways more fully is to increase their use for river-sea traffic between Viet Nam and Cambodia.

In reviewing relevant studies and reports, however, the following important issues emerge:

- It is recognized that the potential for navigation is very much under-utilised. But to what extent does waterborne transport need to be developed to satisfy fast-growing populations and their needs while ensuring the equitable and sustainable use of resources? In other words how, should navigation development respond to the MRC's trademark in *meeting the needs, keeping the balance*?
- Reliable and detailed data on trade and traffic are needed, both for IWT and other transport modes. This lack of data concerns both domestic and international trade, origin-destination structures and modal split, seriously hampering the development of a coherent view on future IWT development needs and requirements. Current statistics are insufficient for producing detailed, bankable feasibility reports on infrastructure-related investment.
- What is the extent of the bottlenecks in waterways as well as ports, rivers, channels, inland ports, hinterland connections, navigation infrastructure and navigational aids? What is the situation regarding maintenance and surveys, and capacity of the fleet ?
- What is the extent of the non-physical constraints for cross-border navigation and what are the costs involved in clearing these constraints ?
- There is almost no coordination or coordinated database on national or regional transport infrastructure works, either ongoing or planned. The few statistics available are scattered around numerous organisations and institutions, and are not easy to access.
- There is a strong need for an LMB-based, or preferably GMS-based, strategic multi-modal transport model to evaluate policies and prioritise investments in the transport sector, and IWT in particular.

It is suggested that the MRC assist in drawing up a master plan for regional inter-modal waterborne transport including the inter-modal terminals required to show the socio-economic feasibility of alternative development scenarios. As already outlined in the Navigation Strategy, the main factors influencing the extent to which the Mekong River and its tributaries are used for transportation purposes include:

- economic and trade growth (development of cargo flows);
- the presence of transport mode choices and the competitiveness of other modes;
- policies and stimulating measures;
- physical restrictions (depth, rapids);
- non-physical (institutional) barriers; and
- labour skills in the waterborne transport sector

At present, classification of the waterway does not exist for most of the LMB except for some segments in Viet Nam. Classified waterways could be named after connected places of traffic

generation, cargo flows and fleet. This means that the navigational quality of a classified segment should be expressed in terms of the loaded draught of a typical vessel that the waterway can sustain during the dry season.

The importance of classification of inland water segments that connect terminal areas (ports) where the traffic is generated reflects the nature and volume of goods and/or the number of passengers handled. The mechanised large-size cargo vessels used for large-volume and long-distance transport are determining factors in the classification of the waterways.

In the field of research and modelling, this component of the NAP has among its objectives developing a regional inter-modal waterborne transport model to describe the impacts of investment and policies on the transport sector (such as changes in modal choice and route assignment). This activity should enable the MRC to get assistance from donots to help finance the investment opportunities that are the result of such a master plan. Financial aid required may encompass projects to remove both physical and non-physical barriers to the development of waterborne transport opportunities. It is intended that that prioritised investment opportunities will be worked out at pre-feasibility level.

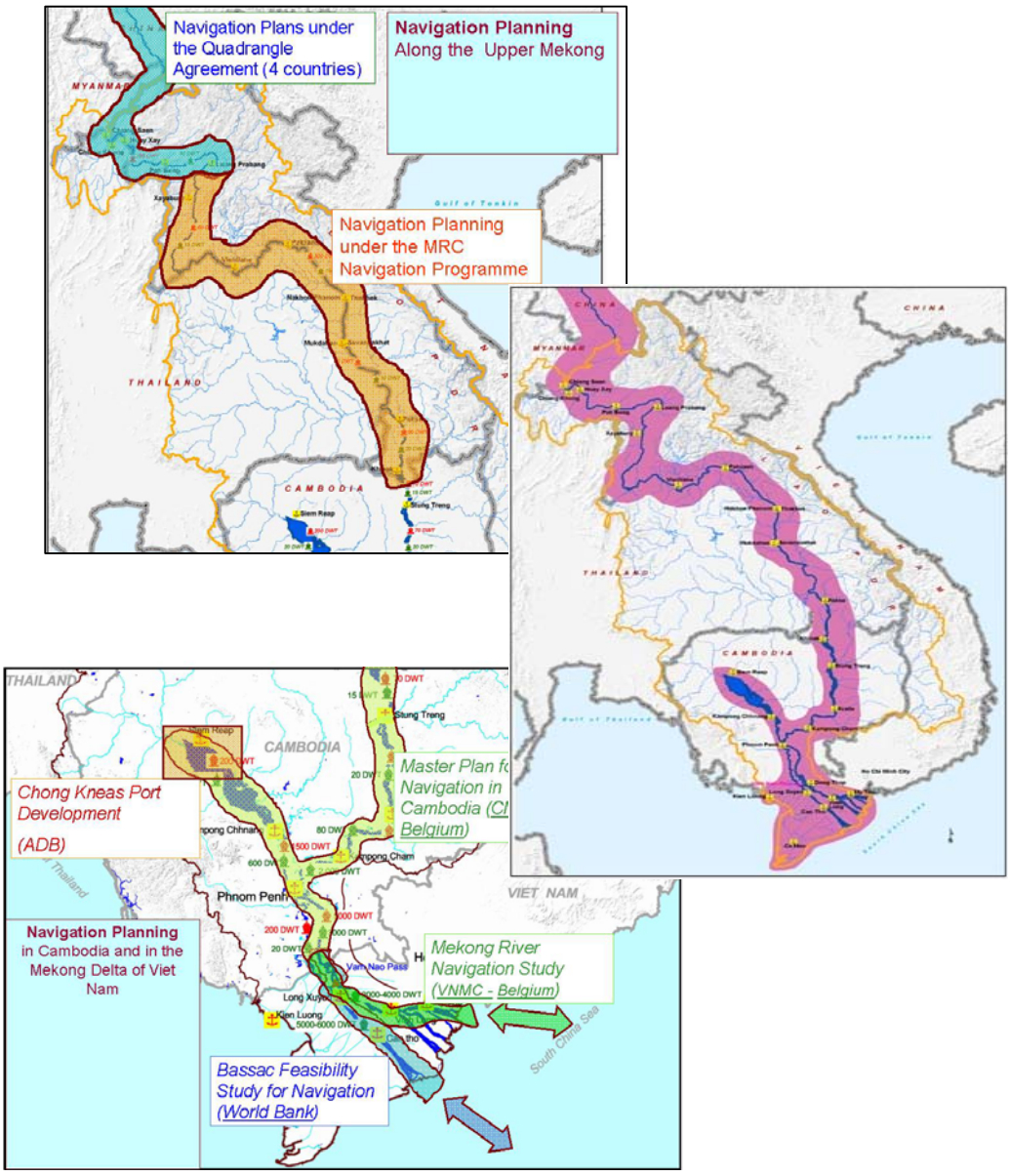
The output of the component will therefore elaborate on the most likely scenarios for developing inland waterborne transport and maritime access endorsed by the respective countries. In the resulting Waterborne Transport Sector Development Action Plan, four regional aspects will be studied:

- access of sea-going vessels into, and transit of sea-going vessels through, Viet Nam;
- inland waterway traffic between Cambodia and Viet Nam;
- access to southern Lao PDR by means of multimodal transport; and
- cross-border waterborne transport between Lao PDR, Thailand, Myanmar and China

In the following map, it can be seen that different navigation planning exercises have already been initiated or are being prepared, mainly at the national level and with assistance from the ADB, the World Bank and bilateral donors. Component 1 will prepare a regional master plan based on the inputs from all these plans and on further studies of the areas and sectors which have not been covered. It is therefore highly recommended that all the studies and plans follow a similar methodology. The projects by the Government of Belgium on Mekong Navigation are on a bilateral level with the National Mekong Committees of Cambodia, Lao PDR and Viet Nam. According to the bilateral agreements with Belgium, these projects will form part of the Navigation Programme but will be managed, implemented and executed by the NMC's.

Relevance of waterborne passenger transport and tourism

National and cross-border tourism navigation is underdeveloped on the Mekong and its tributaries. Major tourist sites are located close to a number of navigable channels and in reach of well-equipped cruise ships. Cross-border waterborne tourism in the region could add in a substantial way to the existing tourist offering. Tourism has proven to be a major force for social and economic development in all member countries. Water-based tourism could play an important part in the diversification strategy to keep the tourism industry healthy and growing. Waterborne tourism has the added benefit that it creates a lot of jobs and – if managed well – the impact on the environment is small.



Expansion of the tourism industry has until now been a major impulse to private sector growth in all MRC member countries. Development of the Mekong for tourism could benefit many areas that until now have had very limited options for economic diversification beyond agriculture. Until now, no clear policy has been formulated to develop waterborne tourism nor has specific support been made available to this branch of the tourism industry.

In some areas in the Mekong basin, waterborne passenger transport is the only mode of transportation available due to geographical and soil conditions. However, its integration into transport planning is very limited, its role is underestimated and policy makers pay little attention to the benefits of passenger transport.

Regarding the prospects for tourism development, a specific set of guidelines could be developed to ensure that the full potential of these activities is realised while at the same time safeguarding natural and human resources. By doing so, there will be a greater chance to limit negative side-effects such as overexploitation and unnecessary disturbances, disrespect for local cultures and communication of diseases. The MRC and its 4 member countries have a common responsibility to ensure that the utilisation of the Mekong River for tourism

purposes is carried out only on a sustainable basis. Due to the short-term economic benefits of increased tourism, awareness of the negative long-term consequences of such activities should be given high priority on national and local levels. In this field, the MRCS could assist the LMB countries by developing a comprehensive reference document to be used when national guidelines are to be formulated.

Apart from trade, it is recommended that the Regional Master Plan for developing waterborne transport addresses the opportunities for rural waterborne transport in the different countries.

Relevance of rural waterborne transport

The socio-economic outcome of the development of both regional and rural waterborne transport on the Mekong River should not only be assessed in economic and financial terms. The pure economic function of navigation should, where possible, be geared towards opportunities for poverty reduction, gender development and overall sustainable pro-poor growth.

For many poor people, the river is the lifeline to the outside world and the only way to access basic social services. The very poor rely on an unspoiled river for there livelihoods as they directly use this vast natural resource as the source of nutrition and drinking water.

The transport of people and goods with small country craft is estimated to have a limited economic function. This function might grow considerably if rural navigation networks can be linked to regional networks. Synergies between the two systems are clearly visible in the Mekong delta where agricultural products are transported by linking small-scale rural transport with regional bulk shipping. It is of great importance to understand the relationship between the two transport systems in the Mekong basin. More in-depth information could help formulate interventions to have poor people reap the benefits of improved navigation.

In the process of developing rural navigation, small economic activities in the form of informal companies could provide a valuable change to create jobs. These jobs might be related to producing goods that could be sold with the use of new transport opportunities. But new jobs would also be created in the transport sector. Altogether, the Mekong provides an infrastructure that could be used as an important impulse for private-sector development.

But the negative effects should also be understood. The NAP needs to pay ample attention to the fact that large ships will have a negative impact on communities along the river. Standardized and well-understood participative processes in the form of Social Impact Assessments will play a key role in preventing negative consequences that could undermine the NAP's success.

One important institutional-strengthening element that will be derived from this component is the opportunity for member countries to draw lessons from each other on the role of rural waterway transport and how to manage this sector.

To manage the impact and opportunities created by the NAP, the outputs of this component will concentrate on sketching out the socio-economic and cultural situation of the people using and living along the river. Further attention is needed to those economic activities and policies that could be developed in the wake of the NAP. The central output in this component is to link the interest of the poor and other specific groups to opportunities created by increased navigation on the Mekong and sustainable private-sector development.

Floods and Transportation

The impacts of devastating floods on the people in Cambodia and Viet Nam in 2000 demonstrated the urgent need for improvement of boat transportation. A number of communities were left stranded in areas without communication while boats for relief aid were simply not available. The inundation area in Cambodia around the Great Lake, Tonle

Sap, Bassac and Mekong rivers is so vast that road transport is impossible for about 4-5 months a year. Boat transport during the floods therefore has to be considered as the normal mode of transportation, not only during emergencies. An important element to be investigated will be the relation between floods and transportation.

Gender and transportation

Navigation enhances opportunities for both sexes to increase their participation in economic and social development by increasing the movement of people, goods, and services by river transport. Navigation and management training for men and women will encourage women to have a say in decisions and take part in economic, social, cultural and political life on an equal footing with men. Once women are able to exploit the human and natural resources they possess, they can contribute to fair and sustainable economic development. It is of paramount importance that women actually see their situation improve, not only within the family context but also on the policy and decision-making level. Realising that in countries such as Cambodia and Lao PDR, where the socio-cultural and economic environment does not allow equal benefits for women, the promotion of gender equality forms part of this programme. The questions take into account the key analytical concepts of gender-based participation and empowerment: (1) division of labour (2) access to, and control of, resources and benefits (3) practical gender needs and strategic interests and (4) socio-cultural, economic, political, environmental and demographic factors. These considerations will also receive due attention during the training organised under this proposed programme.

2.2 Stakeholder Analysis

Throughout the implementation of this component, close cooperation with national partners and regional stakeholders will be important to achieve the most cost-effective and workable solutions. On the national level, the work carried out within this component will directly involve the NMC's as the main national focal points and should also involve several line agencies. It is obvious that the ministries of transport and national waterway authorities should be involved. But drawing up a regional master plan for navigation development that is realistic and has national ownership requires the engagement of the planning and commerce ministries which often decide overall priorities and strategies to attract foreign investment and improve trade. In connection with the development of rural water transport, it might be useful to involve other ministries that have specific mandates for rural development issues.

The Navigation Programme has already involved several stakeholders in the formulation of this component. By hosting a workshop together with UN-ESCAP on regional transport planning and inter-modal links in November 2003, the MRC invited its partners to cooperate more closely. Information sharing and efforts to reach a common understanding of the challenges and opportunities connected to infrastructure development in the Mekong region is an important step in the direction of closer cooperation. Such collaboration is expected to enhance the outcome of the master plans for the waterborne transport sector and is a direct contribution to the improved coordination mechanisms that are part of Component 4. Exchange of information and policy coordination is not limited to regional meetings but also between stakeholders who have a specific interest in certain aspects of Mekong navigation development or in developing particular stretches of the river relevant for the work carried out within this component.

For the monitoring of environmental and social impacts of navigation on river communities, it seems useful to involve some of the local and international NGO's that work with them and therefore possess valuable local knowledge and networks that will ensure a credible monitoring of impacts. The NGO's will also be valuable partners in identifying waterway and port improvements that could benefit local communities and their access to social services and markets in provincial centres.

2.3 Relationship to MRC Navigation Strategy

All the objectives and outputs described in this component are completely consistent with the objectives of the approved MRC Navigation Strategy.

The navigation strategy, accepted in August 2003, confirms that the countries want the MRC to be more involved in detailed regional transport planning and coordination between the agencies involved in transport, particularly in waterborne transportation. During the development of the strategy, it was made clear that a financial and technical feasibility and master plan for improving waterborne transport within the regional inter-modal system will be required to fully realise the trade and transport potentials. Besides the importance of regional trade, accessibility to rural and remote areas will also be examined, assessed and improved. That is why this component also concentrates on more social issues such as rural transportation and basic infrastructure, poverty reduction and gender development.

The following quotes from the approved strategy support this view:

Five Strategic Objectives – proposed activities

1. Related to the Trade, Transport and Safety Objective – *non-physical* improvements

- Regional harmonisation of systems for data collection, use and dissemination;
- Developing a regional transport planning model, covering domestic and international trade, to identify the optimal use of water transportation within the multi-modal transport system (e.g. BDP);
- Formalities and charging systems with regionally/internationally accepted rules and standards;

2. Related to the Trade, Transport and Safety Objective – *physical* improvements

- Demonstration (pilot) project for gradual introduction of night navigation (for the time being, this will be limited to the stretch of the mainstream from the Mekong Delta up to Phnom-Penh);
- Develop a knowledge base on river training works issues, including river morphology and riverbank stability, and propose protection measures;
- Advice on waterways improvement works (dredging, river training works, access channels etc) and maintenance in relation to fleet and transport cost
- Carrying out timely update of the Navigation Programme in the light of transport sector developments and other MRC programmes and priorities
- Improvement and optimisation of the inland waterway and river-sea fleet in LMB;

4. Related to the Environmental Objective

- Assess and monitor, together with other relevant and directly related partners, environmental impacts from increased navigation;
- Collect, examine and distribute environmental data relevant for navigation and the potential impact from increased IWT (including river training works);
- Create increased awareness of environmental issues associated with navigation, both negative and positive, amongst decision makers and stakeholders; and
- Make reports, studies and impact assessments available for the public and defined target groups on national and regional levels and present the conclusions.

5. Related to the Social Objective

- Support the development of a framework for increased cross-border water-related tourism;
- Implement guidelines for incorporation of social issues in major navigation projects or studies;
- Carry out Social Impact Assessments of major navigation improvement projects;
- Prepare a baseline for social impacts from river-based tourism in the member countries;
- Prepare guidelines for assessment and necessary actions to be taken for increased river-based trade;
- Detailed study on Rural Water Transportation to improve the access to/from remote villages alongside the river;
- Prepare a systematic approach for how to utilise boats and ships under flooding and emergency situations
- Facilitate training of national officials on how to improve and promote water related tourism development
- Prepare a systematic approach for the utilisation of boats and ships during flooding and emergency situations.

3. OBJECTIVES AND PROPOSED FRAMEWORK

3.1 Objectives

The **Overall Objective** of the MRC Navigation Programme:

To promote freedom of navigation and increase the international trade opportunities for the MRC member countries' mutual benefit, and to assist in co-ordination and co-operation in developing effective and safe waterborne transport in a sustainable and protective manner for the waterway environment.

In general terms, it is proposed to:

(1) provide socio-economic justification for the MRC Navigation Programme
(2) identify investment opportunities for developing waterborne transport
(3) identify sources of finance
(4) formulate recommendations on institutional development
(5) implement pilot projects
(6) develop an impact monitoring system
(7) formulate recommendations on institutional strengthening/capacity building겢

The **immediate objectives of this NAP Component** are:

6. to assess the socio-economic outcome of enhancing navigation on the Mekong River
7. to examine and propose cost-effective and practical ways in which cargo and passenger transport on the Mekong waterway network can be increased as a separate transport mode and as a part of the regional multimodal transport network
8. to provide a feasible and competitive scheme for Regional Navigation Development to target investment
9. to assist in developing rural waterborne transportation to improve access to markets, schools, hospitals, transport in remote areas and to improve navigation during floods
10. to protect and promote the interest of the people who live directly with the river (e.g. bank erosion)

3.2 Outputs and activities

Outputs for this component comprise, but are not necessarily limited to, those summarised below. There are two sub-components – the *Regional Master Plan for Navigation* which includes the social and economic justification and *Supporting Projects* consisting of national activities to be used as input to the Regional Master Plan, pilot projects and training.

SUBCOMPONENT 1: REGIONAL MASTER PLAN FOR NAVIGATION

Output 1 **Traffic and trade scenarios**

Successful development of regional waterborne transport on the Mekong River depends to a large extent of the volume of cargo to be transported. In general, waterborne transport is a suitable mode of transport for low value, non-perishable dry and liquid bulk cargo over long distances and in large consignments. In the past twenty years, however, waterborne transport of containers has also been successfully developed in a number of countries. Rural waterborne transport in the Mekong region is, especially in the delta area, an important and sometimes the only mode of transport, not only for local trade but also for passengers. Finally, waterborne transport for tourism is rapidly developing in the Lower Mekong Basin. While designing the MRC Navigation Strategy, it appeared that little is known about waterborne transport on the Mekong River. Data, if available at all, are scarce and not reliable. The Navigation Programme therefore envisages a short-term priority activity of identifying and establishing traffic and trade scenarios for waterborne transport on the Mekong River as a basis for further development.

Activity **1.1 Collection and analysis of data and information**

In order to establish traffic and trade scenarios for the development of waterborne, transport the relevant data should be collected and analysed. This activity comprises, but is not necessarily limited to:

- collection and analysis of statistical information on waterborne transport and on those cargo flows transported by road and rail that potentially may be diverted to waterborne transport on the Mekong River;
- collection and analysis of data and information on rural waterborne transport systems along the Mekong River;
- collection and analysis of data and information on waterborne transport for tourism along the Mekong River; and
- establishment of a database on cargo flows and passenger transport, focusing on those that are likely to be diverted to waterborne transport on the Mekong River.

Important note: Most of these data will be collected during implementation of *Component 4: Information, Promotion and Coordination* although additional data that may be required will be collected during activity 1.1.

Activity 1.2 **Evaluate the national transport development strategies and master plans**

Assess the regional economy and the national economic development of the member states and assess the national transport strategies and plans in order to identify potential (regional) flows of cargo and passengers that may be attracted by improved navigation conditions on the Mekong River. This includes:

- collection and analysis of relevant data and information on the economic development of the region (Cambodia, Lao PDR, Thailand, Viet Nam, Myanmar and China), focusing on industrial development associated with

the transport of large volumes of non-perishable dry and liquid bulk cargo and/or large numbers of containers;

- collection and analysis of the national transport strategies and plans of the four member states as well as Myanmar and China for the development of waterborne transport on the Mekong River; and
- collection and analysis of the plans for the development of the transport infrastructure (road, rail, waterways) in the region by the national governments and international programmes/agencies such as GMS, WB, ASEAN, UN-ESCAP, ILO, UNCTAD, PIANC,etc.

Activity 1.3 Field studies

Design and carry out field studies for surveying regional traffic and trade.

Important note: Most of the surveys will be carried out during implementation of *Component 4: Information, Promotion and Coordination* although additional data that may be required will be collected during surveys in activity 1.3.

Activity 1.4 Comprehensive supply-demand analysis for the development of waterborne transport of cargo

Identify and justify alternative scenarios for the development of (regional) waterborne transport of cargo on the Mekong River. These scenarios consider the Mekong River as a stand-alone waterway route and/or as an integrated part of the regional transportation network, based on the data and information collected and the expected economic growth in the member countries in the region. Only the comparison (screening, interpretation, classification and evaluation of collected data) between the supply and demand side will allow for an early identification of bottlenecks and subsequent proposals for their solution.

A. On the ***supply side***, the study will particularly cover but not be limited to an analysis and quantification of the physical, organisational and legal bottlenecks and issues, performance indicators and recommendations for eliminating the bottlenecks.

- Identification and assessment of the existing infrastructure. This includes an evaluation of the inland waterway system including rivers, channels, river ports, and other infrastructural works and inter-modal links with other means of transport (hinterland interfaces). The evaluation will focus on physical characteristics (least available depth, width, river training works, dredging, locks etc.) and navigational facilities (harmonised navigational aids, night navigation, pilots etc.). It will also include an analysis of maintenance works (notably dredging and maintenance requirements in river ports).

  Drawing up of an up-to-date exhaustive inventory of bottlenecks, specifying the nature of the works to be done to eliminate them and the way these could be financed. Governments and National Mekong Committees should be encouraged by the MRC to prepare their proposals on how to carry out the inventory concerning their respective segments of the Mekong inland waterway. It is recommended that the MRC coordinates the activities.

- Analysis of the organisational aspects of international river transport. This includes an inventory of the organisation of responsibilities within the countries in the Lower Mekong Basin and institutions with respect to

the inland waterway system. Where applicable, this includes an inventory of communication procedures between the NMC's and the MRC as well as local governments responsible for different transport modes (notably communications between road, rail and river transport). As part of the organisational aspects, an analysis of documentation procedures and requirements for Lower Mekong inland waterway operators will be made.

- Analysis of the legal aspects. The starting point will be an inventory and examination of legislation in force. From there, the lacunae and bottle-necks from the point of view of Lower Mekong inland navigation can be established taking into consideration the new agreement on the cooperation for the sustainable development of the Mekong River Basin (MRC - 1995). One of the key elements in the agreement is Article 9 on freedom of navigation which has a common interest to increase international trade and development of navigation facilities. Shipping is one way to achieve this. As stated before, many of the obstacles to the development of river-sea transport are neither difficult nor expensive to solve. With custom procedures, for example, maritime ships entering the inland waterway network on their way to an inland port have to undergo several customs clearance formalities –even if they have loaded their cargo in another LMB country. This causes increased costs, not only because of the interruption of the voyage but also because extra fees have to be paid. It also gives river-sea transport a disadvantage when carrying out transport within the LMB (Viet Nam and Cambodia) as compared to the other modes that do not have to bear such extra expenses. It was felt that the system should be changed so as to allow for customs clearance to take place in the (inland) ports of loading and unloading.

Important note: Most of the analysis of the legal aspects and problems will be carried out in *Component 2: Legal Framework for Cross-border Navigation*.

B. On the ***demand side****,* an analysis based on available data (from existing market surveys) will be conducted with respect to the Lower Mekong Basin inland water transport owners. This analysis will concentrate on the requirements of inland and maritime water transport operators to develop sustainable river transport lines to and from the boundaries of the Lower Mekong Basin. Like the supply side analysis, the evaluation of the demand (potentials) will concentrate on physical aspects, organisational issues and legal requirements. The study will take into account the economic status among the riparian countries in relation to variations where some countries export more than others.

Activity 1.5 Qualification and (where applicable) quantification of present and future physical requirements according to the above mentioned characteristics.
The result is the general identification of physical requirements in accordance with the compiled database with the bottlenecks (Activity 1.4) and in consideration of future physical requirements resulting from the development and forecasts of trade and traffic.

Activity 1.6 Carry out a study on the optimum accessibility of MRC Member Countries for regional and international maritime and inland navigation and waterborne trade.
This study will investigate which waterways are to be used for regional traffic. Between Cambodia and Viet Nam, it is not known which waterway is best for cross-border IWT and for access by maritime vessels: the Mekong mainstream

or the Bassac River from the sea to the Vam Nao Pass. This cannot be seen in isolation with the Legal Framework Component. The analysis will include that part of the legislation that has a possible impact on (i) market oriented organisation and operation of the sector, (ii) competitiveness between the modes of transport, (iii) competitiveness within the sector, (iv) free access to the inland water transport sector operations, (v) cargo allocation procedures, (vi) relation with other water resources interests (transboundary issues). See also Output 2 of *Sub-component 2: Supporting projects*.

Activity 1.7 Supply-demand analysis for the development of waterborne passenger transport and tourism

Identify and justify alternative scenarios for the development of (regional) waterborne passenger transport and tourism (see methodology of Activity 1.4)

Activity 1.8 Supply-demand analysis for the development of rural waterborne transport

Identify and justify alternative scenarios for the development of rural waterborne transport systems (see methodology of Activity 1.4)

Output 2 <u>Master plan for regional (intermodal) waterborne (Cargo, Passengers and Tourism) transport and development of rural water transport</u>

Based on *Output 1,* several likely scenarios can be developed for the waterborne transport of regional trade. These scenarios include, but are not necessarily limited to, regional (international) trade in the (a) Upper Mekong area between China, Myanmar, Thailand and Lao PDR, (b) the inter-modal east-west corridor between Thailand, Lao PDR, Cambodia and Viet Nam, (c) the Lower Mekong area between Cambodia and Viet Nam. Develop a realistic master plan for tourism and passenger transport on the basis of the demand analysis for the development of waterborne passenger transport and tourism.

This specific output will identify opportunities for private-sector development and the need for supportive policies for passenger transport and tourism. At the same time, the potential impact of tourism on cultural and natural sites and the feasibility of tourism-linked community and gender development will be analysed.

Initial studies show that a substantial part of the rural population, especially in the Mekong delta, depends on waterborne transport. However, there is no detailed overview of the composition of the fleet or flows of passengers and goods. It is expected that more in-depth research will show a very diverse picture due to the different development levels and social practices. Better information on current rural waterborne transport is the first step in developing approaches for improving this sector. The activities in this output are also focused on having an immediate positive impact on the poorer part of the population and should create specific opportunities for women and vulnerable groups to improve their position and participation in the community and in the economic process. The activities envisaged include, but are not necessarily limited to, the activities described below:

Activity 2.1 Schematise the inter-modal regional transport network: roads, rail, waterways, ports and fleet.

Based on *Output 1* and the specific analysis of the ASEAN, GMS and UN-ESCAP/ADB studies on the development of the Trans-Asian Highway and Railway systems, an inter-modal regional transport network will be designed. This network will be used for the inter-modal waterborne transport model of *Activity 2.3* and therefore focuses on the potential inter-modal waterborne transport flows identified in *Activity 2.1*. This activity will also take into account a

World Bank-funded study that VIWA of Viet Nam will carry out regarding the navigation on the Bassac River to Can Tho port.

Activity 2.2 Development of strategic regional intermodal transport model

Based on *Output 1* and the results of *Activities 2.1 and 2.2,* a regional inter-modal waterborne transport model will be developed. This model will be used for the socio-economic analysis of the cargo scenarios identified in *Activity 2.1,* including, but not necessarily limited to, the modal split analysis of *Activity 2.4* and the alternative waterborne transport development scenarios of *Activity 2.5.* The model will be flexible and adjustable to reflect, among others, impacts of different scenarios regarding modal split, inter-modal routes, tariff and tax structure, government transport policies, investments and changes in management and operations of waterways, ports and fleet.
The requirement for a strategic transport model from an LMB or even a GMS perspective could be summarised as follows:

Criteria for passenger model	Criteria for freight model
Multi-modal	Multi-modal
All modes	All modes
Covering the TAN and major national links	Covering the TAN and major national links
Using zonal data	Using zonal data
From trip generation to route assignment	Assignment on corridor-level

The model should be able to represent more than one modal alternative at the same time and should allow for competition of different modes on the same transport network, making it possible to simulate trips using different transport networks which are properly connected (e.g. road+IWT+road or road+IWT+rail). Car, train, IWT and air (tourists) should be modelled for passenger transport. For freight, the relevant modes are truck, rail, IWT, short sea (and deep sea) shipping.

The network coverage should include not only the four LMB countries but also Myanmar and China (Yunnan Province).

For research, modelling and planning purposes within the LMB, an appropriate zoning system and uniform data format should be established.

A strategic transport model should include all traditional modelling stages of generation, distribution, modal split and assignment in order to model different types of impacts. These range from the introduction of night navigation to deepening certain stretches of the Mekong River (e.g. the Bassac or the stretch between China and Vientiane or even Savannakhet). They also include upgrading the rail connection between Bangkok and HCMC and the TAN Routed A-2 between Bangkok, Vientiane and Viet Nam as well as the long-term effects of changes in the economic importance of provinces and regions.).

Activity 2.3 Modal split analysis

Based on *Output 1*, the results of *Activities 2.1 and 2.2* and using the inter-model waterborne transport model developed in Activity 2.3, a modal split analysis will be carried out. The criteria on which the analysis will be based encompass, but are not necessarily limited to total least financial costs, lot size of consignments, reliability (quality and regularity) of service, risks and safety (loss and pilferage, disruption of service).

It is also requested to evaluate the modal split based on minimum resource costs, taking into account the external costs of the alternative modes of transport regarding environmental and social impacts.

Activity 2.4 Scenarios based on different sets of Least Available Depth (LAD)

Based on the demand and supply figures, propose different scenarios for different ship tonnage/cargo along the main stream, tributaries and canals. The required deadweight tonnage or ship size will then be translated into the Least Available Depth (LAD) requirements for the different parts of the Mekong River system.

Activity 2.5 Develop waterborne transport development scenarios

Based on the results of *Activity 2.4 and 2.5,* alternative development scenarios to enhance and improve waterborne transport activities. These scenarios will be based on the potential of different routes between major destinations in the region. Include in the scenarios the currently under-developed areas of historical, natural and cultural interest along the river. These scenarios will include, but are not necessarily limited to:

- improvements in the waterway infrastructure and management (aids to navigation, introduction of night navigation);
- waterborne tourism related to cruises, fast boats, country craft, overnight trips and short trips on tour boats;
- investments in ports and fleet; and
- improvements in port and fleet operations to meet the regional (inter-modal) waterborne transport demand.

Activity 2.6 Waterborne passengers transport

Review promising scenarios to develop waterborne passenger transport and tourism in the Mekong basin in relation to other modes of transport and based on ***Output 1***. Distinction is to be made between more urbanised areas and rural areas and local and inter-local transport. The scenarios include:

- potential cross border passenger transport; and
- suggestions how to link current national passenger transport systems and tourism.

Activity 2.7 Develop a strategy to stimulate the growth of cross-border waterborne tourism in which benefits are generated and shared by all MRC member states. Include the current tourism development programs of the individual countries, private sector tourism associations and GMS, ASEAN and ESCAP. Identify ways to deal with impeding factors for growth of the industry and cross-border tourism.

Activity 2.8 Identify a number of promising areas where rural waterborne transport is used and develop specific scenarios for at least four areas for how rural waterborne transport can be developed.

Take into account regional differences in use of rural waterborne transport and available infrastructure in different locations. Include in the scenario at least the following variables:

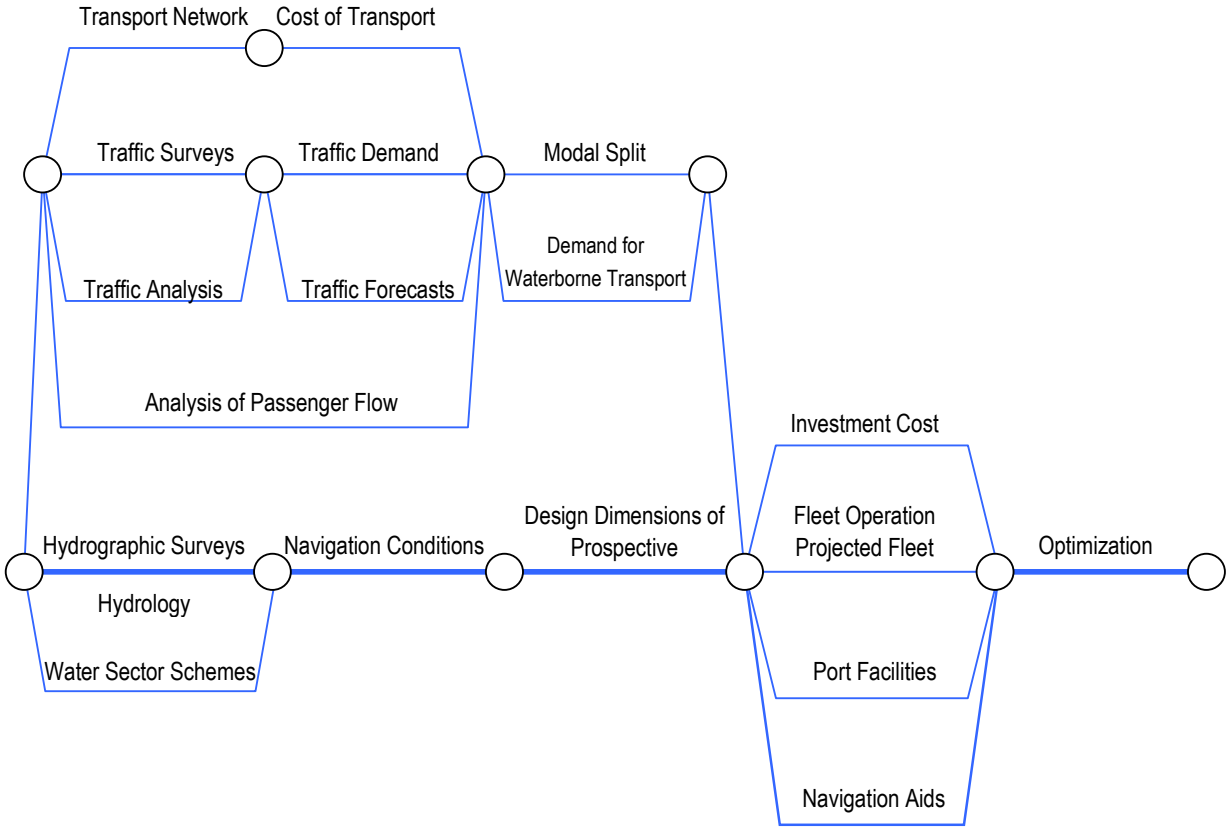
- the links of rural transport to other modes of transport; and
- current or potential feeder role of rural waterborne transport to regional waterborne transport.

Activity 2.9 Develop specific strategic approaches in line with national policies to stimulate:

- development of rural waterborne transport;

- integration of rural waterways in overall transport planning, removing of obstacles in and maintenance of waterways and infrastructure, inter-modal linkage, technology and material development for boats and packing methods; and
- support to vulnerable groups (micro-credit facilities, education, training).

WATERBORNE TRANSPORT CRITICAL PATH DIAGRAM



Activity 2.10 Carry out an Environmental Impact Assessment (EIA) and Social Impact Assessment (SIA) for the development of regional waterborne transport.
A social impact assessment will be carried out for the alternative scenarios for the development of waterborne transport. Carry out a Social and Environmental Impact Assessment (EIA) of increased waterborne cargo, passengers and tourism. This assessment will be based on the guidelines of the World Bank, the ADB and the MRC in agreement with the laws, rules and regulations of the member countries involved. Cooperation with civil society is crucial.

Activity 2.11 Carry out an economic and financial evaluation of the alternative waterborne transport development scenarios.
The feasibility of the alternative scenarios for the development of waterborne transport will be evaluated in both economic and financial terms.

Activity 2.12 Carry out an economic analysis for each member country to assess the impact of the proposed activities and its effect on regional and rural private sector development.

Further evaluate the effect that improved rural waterborne transport will have on different social strata, gender development and vulnerable groups. Evaluate the socio-economic impact of increased waterborne tourism. Integrate in the assessment the concerns of rural and poor communities and specific vulnerable groups like women and ethnic groups. Again, close cooperation with civil society is crucial. Assess the financial and economic benefits based on the different scenarios of improved rural waterborne passenger transport
Special attention will be paid to development opportunities for the private sector, especially focusing on opportunities for vulnerable groups. The assessment should analyse the impact for different member countries in both urban and rural areas.

Activity 2.13 Determination of the Optimal Mekong Navigation Scenario and Least Required Depth (LRD)

Based on the above, the optimal development scenario will need to be selected. This Optimal Mekong Navigation Scenario will be linked to certain Least Required Depths (LRD) for the different parts (mainstream, tributaries and channels) of the Mekong system. With respect to the design dimensions, it should be noted that the Least Required Depth (LRD) is the predominant factor affecting navigation conditions as it determines the required and allowable draft of the vessels and hence the carrying capacity of the fleet.
This LRD will serve as the yardstick for deepening the river where required and as a yardstick for maintaining the river depth. The LRD will be the basis for the Navigation Agreements and Protocols that will be formulated in *Component 2 Legal Framework for Cross-border Navigation*.
This depth (which varies according to different stretches) will serve as a crucial input to the MRC Water Utilisation Programme (WUP). The WUP will need this official depth to be linked with rules for water quantity based on water flow.

Output 3 Evaluate the socio-economic outcome of the development of both regional and rural waterborne transport

This output will help assess how benefits of improved navigation on the river will be distributed among the different stakeholders. The following navigation activities are considered:

- regional waterborne transport
- regional waterborne passenger transport and tourism
- rural waterborne transport
- state-run, private and informal companies

To make an assessment and monitor the impact under this output, a baseline survey and monitoring system has to be designed, based on specific socio-economic and cultural indicators. To prevent negative effects of specific projects implemented under the NAP, Social Impact Assessments need to be carried out. Manage and monitor the follow up of such assessment.

Activity 3.1 Identify relevant social and cultural indicators to design a baseline survey and a monitoring system for the social impacts of the Navigation Program.

Activity 3.2 Design and conduct a comprehensive social and cultural baseline study by:

- selecting, in consultation with all member countries, a number of areas where the base line study will be conducted;
- identifying two sets of socio-economic and cultural parameters. One set covering the Lower Mekong Basin and one country-specific set;

- identifying per country one competent institution or organisation that can conduct the base line study and that can periodically gather new data;
- involving line agencies in the design of the survey to gather relevant data for policy development and management;
- working out for each country which line agency is responsible to analyse socio-economic data and disseminate information to other agencies. Focus on identifying and mitigating negative effects of the Navigation Program and on opportunities for direct or indirect poverty alleviation among vulnerable groups;
- establishing local river users networks to be involved in the monitoring process;
- evaluating the capacity of the institutions involved in the use of socio-economic and cultural parameters; and
- agreeing on a regular review of the socio-economic impact of the NAP and cross-border negative impacts and develop guidelines to mitigate negative side effects.

Activity 3.3 **Use the baseline study to identify urgent issues in relation to navigation with regard to poverty, access to economic resources by women and the use of country craft during flooding.**

Formulate at least four short project outlines that could address these issues in an effective manner.

Activity 3.4 **Develop specific strategies for each of the member countries, based on the outcome of the baseline survey, to support small-scale activities related to the development of rural waterborne transport, specifically targeting vulnerable groups.**

Activity 3.5 **Develop a clear framework for Social Impact Assessments as in use by the World Bank or the ADB for the implementation of all activities of the NAP**

The framework should spell out when a Social Impact Assessment should be prepared and which government agency is in charge of following up the results and recommendations of the assessment and the mitigating measures proposed. This activity comprises, but is not necessarily limited to:

- formulation of a practical guideline for the preparation of cross-border Social Impact Assessments;
- analysis of the current capacity in each of the member countries to prepare Social Impact Assessments; and
- identification of the need for institutional strengthening and capacity building for proper preparation of Social Impact Assessments.

Output 4 **Formulate recommendations for prioritised investments in the inland waterway infrastructure (waterways, fleet and ports)**

Based on *Outputs 2 and 3,* investment programmes will be identified and developed. These programmes will be subject to prioritising by the member states.

Activity 4.1 **Investment opportunities in regional waterborne transport**

Based on *Output 2*, investment opportunities in regional waterborne transport will be identified and elaborated regarding improvement of the waterway infrastructure and waterway management, fleet and fleet operations, port and port operations.

Activity 4.2 Investment opportunities for regional passenger transport and tourism

Based on *Output 3*, investment opportunities for the development of regional passenger transport and tourism will be identified and elaborated. It specifically provides for investment opportunities for the private sector involved in the tourist industry. The development of cruises from Bangkok, Ho Chi Minh City and Phnom Penh to Siem Reap and Angkor Wat and the development of waterborne tourism from Luang Prabang to Simao may be considered as pilot projects and are included in *Sub-component 2*.

Activity 4.3 Investment opportunities in rural waterborne transport

Based on *Output 4*, investment opportunities for the development of rural waterborne transport will be identified and elaborated. These opportunities may comprise, but are not necessarily limited to, improvements of landing stages, craft, engines, ferries, development of service points and workshops with waste reception facilities and development of micro-credit systems. The need for improvements will be specific for the rural systems identified in *Output 4.*

Activity 4.4 Prioritisation

In a participatory process with all stakeholders and beneficiaries of the four member countries, the investment opportunities identified in Activities 4.1, 4.2 and 4.3 will be prioritised.

Output 5 <u>Identify sources of finance for the recommended investments</u>

Apart from contributions by the member countries to finance the investments identified and prioritised in *Output 4*, these programmes may be presented to international financial institutions and/or to bilateral donors.

In addition, opportunities will be identified for potential public-private partnerships in developing and financing (a) regional waterborne transport, (b) waterborne passenger transport and tourism (c) rural waterborne transport

Activity 5.1 International financial institutions and bilateral donors

When considering potential sources of finance, distinction should be made between what will be left to the private sector to develop and what will be the responsibility of the government. Financing needs for the latter may be met from loans/grants through international financial institutions such as the World Bank and the Asian Development Bank or through bilateral aid programmes. The private sector may develop financial support from institutions such as the the International Finance Corporation or commercial banks. For each of the prioritised investment opportunities, it is required to investigate potential sources of finance.

Activity 5.2 Public-private partnerships

A number of activities, especially those related to the development of waterborne passenger transport and tourism, may ask for specific public-private partnerships. Where applicable, the feasibility of these partnerships will be investigated.

SUBCOMPONENT 2: SUPPORTING PROJECTS

Component 1 will prepare a regional master plan based on data analysis, surveys, desk studies and national/regional meetings and inputs from other national and regional planning activities. As indicated in *2.1 Relevance for development of regional navigation,* the projects by the Government of Belgium on Mekong Navigation are inputs to this regional plan. Although they are on a bilateral level with the National Mekong Committees of Cambodia, Lao PDR and Viet Nam and they will be managed, implemented and executed by the NMC's, these projects (see *Outputs 1 and 2* of this Sub-component) will form part of the Navigation Programme.

Output 1 **Master Plan for Mekong Navigation in Cambodia**

The Master Plan for Waterborne Transport in the Mekong River System in Cambodia will cover four primary sectors.

1.1 Rehabilitation of IWT in Cambodia

The Master Plan should hold an IWT and maritime transit improvement programme answering specific operational needs. Strategies and alternative strategies have to be identified for planning, financing, construction and operation of IWT including institutional, operational, and financial factors. The areas of focus are:

(i) the impact on poverty;
(ii) water transport information systems;
(iii) access to water transport;
(iv) IWT development and reform scenarios (operational, financial, legal, institutional);
(v) institutional strengthening and capacity building;
(vi) port development;
(vii) multi-modal transport links; and
(viii) environmental protection and river transport safety.

1.2 Access for ships to Cambodia via the Mekong and Bassac rivers

Issues related to this sector can be placed into three main categories:

(i) technical;
(ii) diplomatic/legal; and
(iii) economic.

1.3 The potential for multi-modal access to southern Lao PDR

The potential for multi-modal access to southern Lao PDR via the Mekong River is primarily dependent on the development of Inland Water Transport in Cambodia and the development of Phnom Penh Port (and Sihanoukville Port) as an international gateway. As such, most of the issues related to this sector will be studied under the previous two sectors.

There are five additional issues that require consideration: (i) The feasibility of developing Kampong Cham as an inter-modal node for road and water transport (ii) The utility of roads in southern Lao PDR (iii) The potential for cargo and passenger generation in southern Lao PDR (iv) The feasibility of making the Khone Falls navigable (if this is viable in any reasonable timescale, it would release significant immediate demand for water transport on the Mekong from Lao PDR, Myanmar and China); (v) The potential for competition from Danang Port when the road link from southern Lao PDR is completed.

1.4 Training requirement

Cambodia has a significant shortage of skills in the construction, operation and management of ports, boats and ships. There are a wide range of skill sets that have been identified as deficient and the project should consider how best these deficiencies can be rectified so that the IWT network in Cambodia can be operated effectively, efficiently and safely.

Output 2 **Improvement of the navigation conditions on the Mekong River in Viet Nam**

The proposal is still under identification but is said to contain the following outputs:

2.1 Study Component:

Investigate the possibilities of improving the international waterway Vietnam – Cambodia for movement of people and goods including tourism. This would accommodate both sea-going and river vessels.
The study includes an identification of the physical and non-physical bottlenecks for inland barges, and for sea-going vessels to the Vietnamese ports and Cambodia. Preparation of a detailed investment plan.
Rural navigation in the Mekong Delta is of prime importance to a considerable part of the rural population. The baseline study will investigate what measures can be taken to improve rural navigation with a specific focus on reducing the poverty level and improving the opportunities for women to participate in society on equal terms, including the use of country craft during flooding.
A comparative study will be made on accessibility of the Mekong and Bassac rivers based on the inputs of the Bassac Improvement Study of the World Bank.

2.2 Concrete Activities Component

Expected results: consolidating IWT activities in the Mekong Delta, improving the efficiency of state management in waterway transport on the Mekong River with the basics of advanced technical applications in research, maintenance, operation and other activities such as culture, tourism, community livelihood. This component will also include building a database on hydrographic and bathymetry surveys based on a new GIS system of the Mekong River (the database shall include channel dimensions, positions, obstacles, constructions, hydrograph, vessels operating on rivers and at ports). Certain stretches to establish the capacity of the entire system, especially the Mekong estuary and Hong Ngu effluence. Updating technical and management handbooks.

Output 3 **Pilot project in the Lao PDR:**
Impact of morphological changes and sedimentology on the navigation operations and infrastructure
Impact of the navigation operations and infrastructure on morphological changes, including bank erosion.

Geomorphological changes directly affect the river bed. Whenever the river bed and currents change, navigation conditions are altered. Shoals appear in the channels and reduce the river depths, cross-currents make manoeuvring difficult, and ports and landing areas suffer the impacts of hydrodynamic forces on the structures. On the other hand, we recognise that hydraulic works such as river training works for navigation improvement may alter the geomorphic regime of the river and significantly aggravate erosion. Since the river flow and

morphology are dynamic phenomena, the river management and protection/regulating works cannot be carried out successfully without a good scientific understanding of the fundamental problems to define the adjusted corrective measures. Therefore the following outputs need to be achieved:

3.1 Detailed (Geo-) morphology study to:

- improve the hydrological, hydraulic, environmental, morphological and geomorphological knowledge base;
- examine the historical evolution of the hydraulic regime and river morphology in the project area;
- forecast channel behavior, sediment transport capacity, hydrodynamic and morphodynamic variations, including analysis of risks[8]; and
- examine in both directions the beneficial and adverse effects on and of basinwide river works and navigation improvement projects along the Mekong River

Implementation of this detailed morphological study will be fully coordinated with the WUP-FIN Team of the Water Utilisation Programme of the MRC.

Impacts from navigation on the banks. During the consultation discussions, great concern was also expressed for the impact of navigation on bank erosion. In this activity, it is envisaged to investigate the impact of different navigation development scenarios on the erosion of the river bank in a river section specifically selected for this purpose. The Lao National Mekong Committee will soon implement a supplemental capacity building assistance project with the construction of bank protections at Wat Muang Kao (Khammouan province) and Pakkadan bank protection (Borikhamxai province) as important pilot projects. Bank protection at the Mekong River, on the Lao side, is intimately linked to capacity building within the LNMC. It is related to its capacity to fully apprehend the bank erosion process, including problem-solving skills within the LNMC for coordination and support in respect to remedies to the effects and to integrate it on behalf of the Lao PDR as a concerted priority issue for the MRC. **These two bank protection projects and the training sessions should include an assessment study investigating the impacts of navigation and should provide recommendations on how to mitigate the impacts, if any.**

3.2 Mitigation measures.

Select and define a program of protective, regulating and development works to minimise the risk of degradation of the hydraulic, morphological and riverine environment and morphological stability that may arrive from:

- increased navigation;
- river training works such as rock-blasting;
- construction of groynes and dikes; and
- dredging and modification of the pattern of certain meanders.

3.3 Improvement measures.

Formulate a technically and environmentally-sound and economically-optimal improvement investment programme that will improve the navigation channel without risks of morphological destabilisation. This programme will form part of the investment plan as stated in Outputs 2 and 4 of Sub-component 1.

[8] The required modelling systems shall be capable of simulating rapid hydrodynamic variations in the river system during both monsoon seasons as well as simulation of the yearly hydrological cycle, with an appropriate time step. Modules for flow, sediment transport/sedimentation simulations, and modelling long term morphological developments shall further be included.

Output 4 **Pilot projects on tourism and navigation**

Pilot Project 1: Development of cruises from Bangkok[9], Ho Chi Minh City, Phnom Penh to Siem Reap and Angkor Wat

It is worthwhile considering implementation of this pilot project for two major reasons:

- it may be developed in conjunction with the pilot project that aims at elaborating protocols on freedom of cross-border navigation between Viet Nam and Cambodia; and
- it provides the opportunity to involve the private sector in Thailand, Viet Nam and Cambodia to provide the services.

Pilot project 2: Development of waterborne tourism from Luang Prabang to Simao

Based on the conclusions, recommendations and lessons learned from measures to enhance the development of waterborne tourism from Luang Prabang to Simao will be identified and elaborated.

Output 5 **Institutional strengthening, capacity building and training**

The activities under this output have two different objectives:

- identification, formulation and implementation of specific activities related to institutional strengthening, capacity building and training directly associated with achieving the outputs of this component. These activities may be related to on-the-job-training, specific courses, workshops and seminars, or provision of scholarships for specific training overseas etc; and
- identification and formulation of needs for institutional strengthening, capacity building and training related to the outputs in this component will be taken up in an integrated approach within *Component 5: Institutional Development*.

  Identification of the activities required under this output will be result of the specific findings, problems and needs encountered while implementing the activities of this component.

  When considering the tentative work plan of the component, the activities may include but are not necessary limited to:

Activity 5.1 Workshops on the different outputs such as:

- traffic and trade scenarios;
- regional waterborne transport planning and modelling;
- development of rural waterborne transport;
- development of waterborne passenger transport and tourism;
- evaluation of the social outcome of the development of waterborne transport;
- identification of investment opportunities and finance

Activity 5.2 On-the-job training of the permanent staff assigned to and responsible for the implementation of the component

Activity 5.3 Preparing and issuing training materials and guidelines of various workshops and seminars

[9] Bangkok - Mekong estuary by sea

Activity 5.4 **Identifying the needs for institutional strengthening, capacity building and training of line agencies, stakeholders and beneficiaries in each of the member countries**, associated with socio-economic analysis and planning of the waterborne transport sector. These needs will be attended to in *Component 5: Institutional Development*.

Activity 5.5 **Identification of the need for further development of education and vocational training institutes and facilities in each of the member countries regarding socio-economic analysis and planning of waterborne transport**
These needs will be attended to in *Component 5: Institutional Development*.

3.3 Time Frame

It is envisaged that the outputs and activities outlined in this component can be achieved within 3-4 years. The time frame for interventions will depend on the results of outputs of the initial studies. A tentative planning is given in Annex 4.

Output 1 will have to be completed prior to any of the other activities, except for the supporting studies and pilot projects of Sub-component 2, *Supporting Projects,* that are suggested for early implementation:

Based on the results of *Output 1* and the experiences of the early pilot projects, the master plan can be developed simultaneously for (a) regional waterborne transport (*Output 2*), (b) regional waterborne passenger transport and tourism (*Output 3*), and (c) rural waterborne transport (*Output 4*).

Based on the master planning of *Outputs 2, 3 and 4,* the social outcome will be analysed (*Output 5*), priority investment programmes identified (*Output 6*) and possible sources of finance (*Output 7*) investigated.

Tentatively, a number of workshops have been indicated for institutional strengthening, capacity building and training (*Output 5 of Sub-component 2*). The conclusions and recommendation of these activities will be an input for *Component 5: Institutional Development*.

3.4 Inputs/Cost Sharing

3.4.1 Contributions from the Mekong River Commission include:

- provision of support and advice from the Navigation Programme Office (NPO) – see *Chapter 4: Management and Implementation* – and other programmes and staff;
- cooperation with the other MRC programmes;
- cooperation with the regional, international and non-government organisations, and development banks;
- recruitment of regional and international consultants, and assistance in recruiting the national staff;
- execution of this component in cooperation with the Country Working Groups (CWG's)
- administration and supervision of the progress and results of this component
- facilitation of consultation visits and workshops to riparian countries
- routine operational expenses

3.4.2 Contributions from the Riparian Countries

The activities related to this component need extensive cooperation from the National Mekong Committees, as well as from the line agencies, stakeholders and beneficiaries in each of the member countries. In *Chapter 4: Management and Implementation,* it is described how the NPO and Navigation Working Groups at the MRC Secretariat will work together with the Country Working Groups (counterparts) in member states.
National contributions may be made in kind such as staff, logistics, data and other facilities.

Political commitment of the member countries to endorse the Navigation Programme should be translated into a high level of commitment at the operational and executive level within the National Mekong Committees and the line agencies involved.

3.4.3 External contribution

The estimated total external funding sought amounts to US$ 4,042,907. This amount covers all implementation costs, including the operational and management costs for a period of 6 years. The amount is exclusive of national contributions.

4. MANAGEMENT AND IMPLEMENTATION

4.1 Implementation

Implementation of the Navigation Programme is dealt with in *Component 5: Institutional Development*. This describes how the implementation of the Navigation Programme will follow a different path from the implementation of other MRC programmes. As such, it introduces a new approach to the actual work as the NAP will mostly be carried out by the countries themselves. This has two advantages –a better sense of ownership and a high degree of capacity building through on-the-job training. The organisational structure and functions of the implementing and advising bodies are explained in detail in *Component 5: Institutional Development.*

The management structure follows a phased approached from a period of general preparations to centralised management and implementation, slowly evolving into a process of planning and decision preparation through intergovernmental sub-working groups.

Phase 1 is a start-up phase of 15 months to fully establish and finance the institutional and organisational structure of the NAP. This time will be instrumental in setting up the Navigation Advisory Body and the full NAP Office with the Navigation Working Groups. The **NAP Start-up team** at the MRC Secretariat will consist of the *Navigation Programme Manager* and a *Navigation Programme Advisor.* The start-up team will lead the **Navigation Programme Office (NPO)** after the start-up period. The NAP start-up team will implement the activities of this output.

It is only during **Phase 2** that this Component will be implemented. During this phase, three main levels will be responsible for the Navigation Programme:

1. The Navigation Advisory Body (NAB) to guide the Joint Committee at high level for national endorsement of programme outputs;
2. MRCS Navigation Programme Office (NPO) consisting of the Navigation Working Groups (NWG's) which will implementation the programme; and
3. The implementing partners in the countries through Country Working Groups (CWG's)

The **Navigation Advisory Body (NAB)** will be the high-level body responsible for stimulating more detailed input from the member states in the decision-making process vis-à-vis the MRC Secretariat, freeing the JC from dealing with rather technical issues. Based on the model of the Technical Advisory Body of the MRC Fisheries Programme, the NAB will report to the Chairman of the Joint Committee. The MRC Secretariat will provide secretarial and administrative services to as and when required, and technical assistance through the MRC Navigation Programme.

The NAB will:

- advise the MRC on all decisions concerning Mekong navigation;
- work out the goals for developing waterborne transport in the region;
- ensure that rules and regulations drafted by Navigation Expert Groups are transposed into national laws (see *Components 2 and 3*)
- develop working programmes for navigation for the MRC and its bodies; and
- evaluate work by the Navigation Working Groups

Its membership will consist of:

- representatives of NMC's and high-ranking officials from line agencies
- the MRCS Navigation Programme Manager
- one participant each from China and Myanmar on an ad-hoc basis as observers
- external experts on an ad-hoc basis as advisors

The **MRCS Navigation Programme Office (NPO)** **consisting of necessary experts from the countries and international advisors organised in the Navigation Working Groups (NWG's)** will not only formulate and supervise all activities necessary to implement the NAP but will also support the above-mentioned Advisory Body. The NPO will also ensure coordination with other programmes of the MRC and the work of the National Mekong Committees and the MRC Secretariat. (see Country Working Groups). The overall planning and supervision of the NPO and the experts will be the responsibility of the riparian Navigation Programme Manager. Coordination between the NAP and the other MRC programmes, the private sector, international and civil society organisations and development banks will also be his or her responsibility. He or she will have the assistance of an international Navigation Programme Advisor who will particularly be responsible for good coordination between the NPO and National Navigation Coordinator under the National Mekong Committee.

The Navigation Working Groups will bring together international and national expertise to implement the NAP. In practice, the five components of the Navigation Programme will be handled by three Working Groups representing all the aspects embodied in the Navigation programme. The three Working Groups are:

The **NWG 1** on **Transport Planning, Socio-economic Analysis and Information**
The **NWG 2** on **Legal Framework, Safety and Environment**
The **NWG 3** on **Promotion, Coordination and Capacity Building**

The NWG 1 will be responsible for implementing:

Full Component **1.** Socio-economic Analysis and Regional Transport Planning including:
- Sub-Component **1.1**: Regional Master Plan For Navigation
- Sub-Component **1.2**: Supporting Projects

Part of Component **4**. Information, Promotion, Coordination, namely
- Sub-Component **4.1**: Information (River Information Services)

The NWG 2 will be responsible for implementing:

Full Component **2.** Legal Framework for Cross-border Navigation
Full Component **3.** Traffic Safety and Environmental Sustainability, including
- Sub-Component **3.1**: Interventions to Improve Traffic Safety and Efficiency
- Sub-Component **3.2**: Environmental Sustainability
- Sub-Component **3.3**: Institutional Strengthening and Capacity Building on Safety and Environment

The NWG 3 will be responsible for implementing:

Part of Component **4**. Information, Promotion, Coordination, namely
- Sub-Component **4.2**: Promotion
- Sub-Component **4.3:** Coordination

Part of Component **5**. Institutional Development
- Sub-Component **5.2:** Institutional Strengthening, Capacity Building and Training

Each Navigation Working Group consists of:

- 1 Riparian Team Leader (with three such leaders in addition to the NAP manager, Cambodia, Lao PDR, Thailand and Viet Nam will all be represented)
- 3 Riparian Experts (from the three member states not serving as team leader)
- 1 International Advisor

- 1 Secretary

Implementation of this component will be achieved through the NWG 1 on Transport Planning, Socio-economic Analysis and Information. It is envisaged that the members of this group cover the following disciplines: transport planning and economy, river and civil engineering, inland and maritime waterborne transportation, port and ports operations, fleet and fleet operations, public participation, social development, rural waterborne transportation and data base management. The qualifications of the staff of the team will be gradually upgraded while working on the job with experienced international consultants.

The Navigation Working Groups are based in the head office of the MRC[10] for the time needed to implement their tasks.

Frequent travelling is considered necessary to achieve permanent involvement and exchange of plans, especially with their direct Counterpart Experts in the equivalent Country Working Group, and commitment of the national committees, line agencies, stakeholders and beneficiaries. In this way, effective cooperation can be formed for the opportune implementation of all activities.

It is envisaged that the expert groups closely cooperate with the international consultants recruited for carrying out the tasks of advice and facilitation. This allows for proper on-the-job training for all team members.

The **National Implementing Partners** consist of a similar set-up as the Navigation Programme Office at the Secretariat. The full-time **National Navigation Coordinator,** an expert in the field of waterborne transport under the National Mekong Committee, will also lead also **3 Country Working Groups (CWG's)** on the same topics as the NWG's of the NAP Office at the Secretariat. Each National Working Group will have a Team Leader who will be the direct counterpart of his fellow country expert in the Working Group at the Secretariat. Regular meetings (frequent travel) between these counterparts will be crucial for smooth implementation.

In brief, there will be 3 Country Working Groups in line with the NWG's at the Secretariat:

The **CWG 1** on **Transport Planning, Socio-economic Analysis and Information**
The **CWG 2** on **Legal Framework, Safety and Environment**
The **CWG 3** on **Promotion, Coordination and Capacity Building**

As for the Working Groups at the Secretariat,

The CWG 1 will be the national counterpart for implementing:

Full Component **1.** Socio-economic Analysis and Regional Transport Planning including:
Sub-Component **1.1**: Regional Master Plan For Navigation
Sub-Component **1.2**: Supporting Projects
Part of Component **4.** Information, Promotion, Coordination, namely
Sub-Component **4.1**: Information (River Information Services)

The NAP Office at the Secretariat does not have the continuous contacts with line agencies, the private sector or civil society. That is why representatives of these agencies have to be included in the Country Working groups.

Each Country Working Group consists of:

- 1 Team Leader
- Representatives from line agencies

[10] This will depend on the space available at the new MRC Secretariat Headquarters. An alternative is to host each NWG in an office close to the MRC Secretariat

- Representatives of the private sector (ship owners, ports, cargo brokers, agents, freight forwarders)
- Civil society
- Other stakeholders

In addition to the presence of generally capable management structures, this requires the ability to coordinate all major aspects of the NAP within the individual country and to participate actively in regional coordination.

4.2 Interfaces

4.2.1 MRC programme

This component has a direct bearing on the following MRC programmes and projects:

- Basin Development Programme (BDP) including flood control and flood control management. It is especially important that the river data collected within the framework of this component will be kept in the river data information system (*Output Information, Coordination and Promotion*) and integrated with the flood management database.
- Water Utilisation Programme
  It is important that the outcomes of this component, especially those regarding rural waterborne transport and its baseline survey, will be linked to the Water Utilisation Programme
- Environmental Programme
  This component will include the assessment of environmental impacts. The basis for this assessment will heavily depend on the information already collected in the Environmental Programme
- Capacity Building Programme Output 9 *Institutional strengthening, capacity building and training* is obviously linked to *Component 5: Institutional Development*. This, of course has to be connected to the overall capacity building programme.

The work carried out within this component will contribute to focusing the attention of the MRC Navigation Programme to areas where most benefits can be achieved through investment in the sector. Within the MRC, socio-economic analysis and planning is primarily of interest to the Basin Development Plan (BDP) which is looking into defining priority areas for regional development and how to ensure that development is sustainable with due consideration of social concerns. In a longer term perspective, it is foreseen that the studies and pilot projects regarding the potential for waterborne tourism development could feed into a future MRC Tourism Programme.

5. ANNEXES

Annex 1 Cost Estimate

C-1
Analysis & planning

OVERVIEW PER YEAR

YEAR	1	2	3	4	5	6	Total
Summary *(in USD)*							
MRCS, external contribution	0	631,090	1,198,513	493,422	39,795	0	2,362,820
NMCs, external contribution	368,375	579,074	546,812	180,235	5,591	0	1,680,087
Total, external	***368,375***	***1,210,164***	***1,745,325***	***673,657***	***45,386***	***0***	4,042,907
NMCs, national contributions	35,875	64,909	65,455	19,834	1,247	0	187,320
Total	***404,250***	***1,275,073***	***1,810,780***	***693,491***	***46,633***	***0***	4,230,227

C-1
Analysis & planning

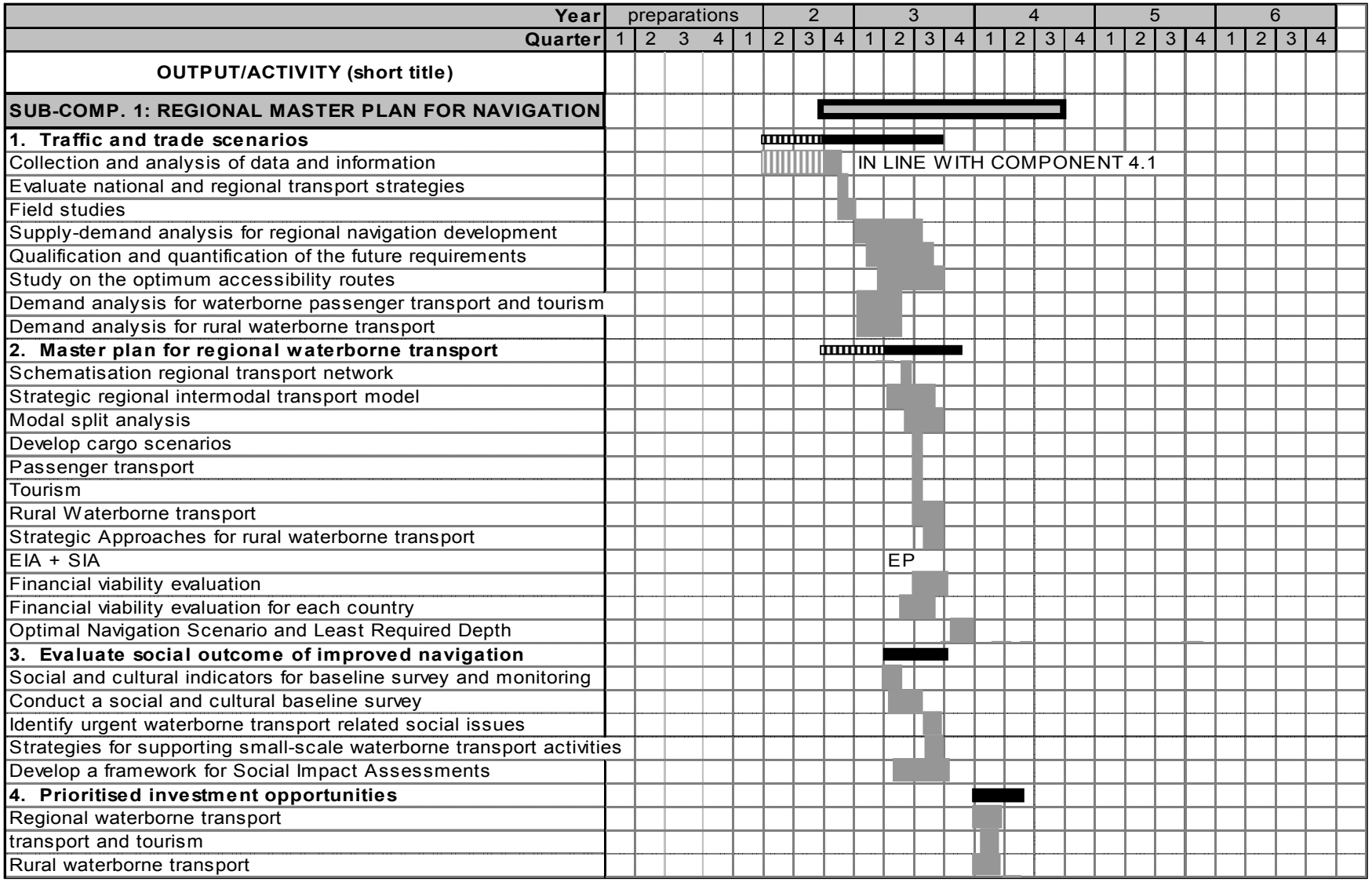
BUDGET OVERVIEW PER OUTPUT

OUTPUT	1.1	1.2	1.3	1.4	1.5	2.1	2.2	2.3	2.4	2.5	total
Summary *(in USD)*											
MRCS, external contribution	145,386	621,282	198,718	103,846	65,640	0	0	724,742	304,232	198,974	2,362,820
NMCs, external contribution	39,742	59,234	25,597	11,157	4,000	736,750	736,750	27,028	11,872	27,954	1,680,084
Total, external	**185,128**	**680,516**	**224,315**	**115,003**	**69,640**	**736,750**	**736,750**	**751,770**	**316,104**	**226,928**	**4,042,904**
NMCs, national contributions	7,381	16,304	5,126	1,086	390	71,750	71,750	4,387	2,912	6,234	187,320
Total	**192,509**	**696,820**	**229,441**	**116,089**	**70,030**	**808,500**	**808,500**	**756,157**	**319,016**	**233,162**	**4,230,224**

C-1 - Analysis & planning	BREAKDOWN OF COMPONENT 1 PER YEAR - MRCS								
Budget Line	**Item**	**year 1**	**year 2**	**year 3**	**year 4**	**year 5**	**year 6**	**ext.**	**natl.**	**total**
	Distribution over time in percent	5	24	43	27	2	0			***100***
	MRCS costs *(in USD)*									
10	**Personnel**									
18	MRCS riparian prof staff	0	27,000	53,400	25,200	2,400	0	108,000	0	108,000
17a	National consultants, legal	0	0	0	0	0	0	0	0	0
17b	National consultants, others	0	31,200	40,800	20,800	3,200	0	96,000	0	96,000
12	MRCS intern. prof. Staff	0	67,100	127,600	71,500	8,800	0	275,000	0	275,000
11a	Intern. consultants, legal	0	21,000	21,000	0	0	0	42,000	0	42,000
11b	Intern. consultants, others	0	226,950	320,450	102,000	13,600	0	663,000	0	663,000
13	Support staff	0	8,000	17,440	5,920	640	0	32,000	0	32,000
	Expenses	0	0	0	0	0	0			
15	Official travel, national	0	0	0	0	0	0	0	0	0
15	Official travel, regional	0	14,700	24,600	5,700	0	0	45,000	0	45,000
15	Official travel, international	0	1,800	3,150	4,050	0	0	9,000	0	9,000
16	Prgm/project evaluation	0	0	0	0	0	0	0	0	0
20	Contracts / sub-contracts	0	0	0	0	0	0	0	0	0
	(specify)	0	84,000	312,000	144,000	0	0	540,000	0	540,000
	(specify)	0	0	0	0	0	0	0	0	0
30	**Training**	0	0	0	0	0	0			
31	In-country training	0	0	0	0	0	0	0	0	0
32	External training at MRC	0	0	0	0	0	0	0	0	0
33	External training elsewhere	0	0	0	0	0	0	0	0	0
34	National workshops	0	3,000	6,900	5,700	2,400	0	18,000	0	18,000
35	Workshops at MRC	0	7,500	7,500	0	0	0	15,000	0	15,000
35	Regional forum	0	0	0	0	0	0	0	0	0
40	**Equipment**	0	0	0	0	0	0			
41	Expendable equipm	0	0	0	0	0	0	0	0	0
42	Non-expendable equipm	0	0	0	0	0	0	0	0	0
	Computers etc	0	0	0	0	0	0	0	0	0
	Communication equip.	0	0	0	0	0	0	0	0	0
	(specify)	0	0	0	0	0	0	0	0	0
50	**Misc**	0	24,613	46,743	19,244	1,552	0	92,152	0	92,152
57	**Contingency**	0	51,687	98,159	40,411	3,259	0	193,516	0	193,516
70	**Secretarial support costs**	0	62,540	118,771	48,897	3,944	0	234,152	0	234,152
	MRCS, external contribution	**0**	**631,090**	**1,198,513**	**493,422**	**39,795**	**0**	**2,362,820**	**0**	**2,362,820**

C-1 - Analysis & planning		BREAKDOWN OF COMPONENT 1 PER YEAR - MEMBER STATES								
Budget Line	**Item**	**year 1**	**year 2**	**year 3**	**year 4**	**year 5**	**year 6**	**ext.**	**natl.**	**total**
	Costs of 4 NMCs									
10	**Personnel**									
18	National coordinator	0	9,500	18,620	12,160	1,520	0	41,800	0	41,800
17a	National consultants, legal	0	0	0	0	0	0	0	0	0
17b	National consultants, others	0	22,100	35,360	12,580	1,360	0	71,400	0	71,400
13	Support staff	0	7,760	11,120	2,080	640	0	0	21,600	21,600
	Expenses	0	0	0	0	0	0			
15	Official travel, national	0	4,800	8,400	2,800	0	0	16,000	0	16,000
15	Official travel, international	0	0	0	0	0	0	0	0	0
16	Prgm/project evaluation	0	0	0	0	0	0	0	0	0
20	Contracts / sub-contracts	0	0	0	0	0	0	0	0	0
	(specify)	350,000	490,000	420,000	140,000	0	0	1,400,000	0	1,400,000
34	National workshops	0	2,400	3,600	3,600	2,400	0	12,000	0	12,000
50	**Misc**	17,500	27,878	26,505	8,661	296	0	0	80,840	80,840
57	**Contingency**	36,750	58,545	55,662	18,188	622	0	84,884	84,884	169,767
	4 NMCs, external	368,375	579,074	546,812	180,235	5,591	0	1,680,084		
	4 NMCs, national	35,875	64,909	65,455	19,834	1,247	0		187,320	
	4 NMCs, total	**404,250**	**643,983**	**612,267**	**200,069**	**6,838**	**0**	**1,680,084**	**187,324**	**1,867,407**

Annex 2 Work Programme



Year	preparations				2				3				4				5				6			
Quarter	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
OUTPUT/ACTIVITY (short title)																								
SUBCOMPONENT 2: SUPPORTING PROJECTS																								
1. Master Plan for Mekong Navigation in Cambodia																								
Rehabilitation of IWT in Cambodia																								
Rehabilitation of IWT in Cambodia																								
The potential for multi-modal access to Southern Laos																								
Training requirements																								
2. Improvement of navigation on the Mekong in Viet Nam																								
Study Component																								
Concrete Activities Component																								
3. Pilot project in the Lao PDR:																								
Impact of morphological changes and sedimentology on the navigation operations and infrastructure - Impact of the navigation operations and infrastructure on morphological changes, including bank erosion.																								
Early results from LNMC-Belgium project on bank protection																								
Detailed (Geo-) morphology study.																								
Impacts from navigation on the banks.																								
Mitigation measures.																								
Improvement measures.																								
4. Pilot Projects on tourism and navigation																								
Development of cruises from Bangkok, Ho Chi Minh City, Phnom Penh to Siem Reap and Angkor Wat																								
Development of waterborne tourism from Luang Prabang to Simao																								
5. Institutional strengthening, capacity building and training																								
Total duration of Component 1																								

Annex 3 Logical Framework Matrix for MRC Navigation Programme, Component 1

In this annex the logical framework matrix is presented for **Component 1** on **Socio-economic planning and analysis.**

Overall Navigation Programme Development Objective	
To promote freedom of navigation and increase the international trade opportunities for the MRC member countries' mutual benefit, and to assist in co-ordination and co-operation in developing effective and safe waterborne transport in a sustainable and protective manner for the waterway environment.	
Component 1: Socio-economic planning and analysis	
Immediate Objectives	
11. Assess the socio-economic outcome of enhancing navigation on the Mekong River *12. Examine and propose cost-effective and practical ways in which cargo and passenger transport on the Mekong waterway network can be increased as a separate transport mode and as a part of the regional multimodal transport network* *13. Provide a feasible and competitive scheme for Regional Navigation Development to target investments* *14. Assist in developing rural waterborne transportation to improve access to markets, schools, hospitals transport in remote areas and to improve navigation during floods* *15. Protect and promote the interest of the people that live directly with the river (e.g. bank erosion)*	
Indicators	
1. Socio-economic justification for the MRC navigation programme formulated *2. Identification and projection of more cost-efficient cargo and passenger flows, modal shifts and customs procedures* *3. Identified investment opportunities for developing waterborne transport and sources of finance* *4. Document the socio-economic benefits of rural waterborne transport and promote and facilitate investments projects* *5. Developing an impact monitoring system and promote 'green' and socially beneficial navigation development*	
Means of Verification	**Assumptions**
1. Regional master plan findings	Adequate information available to make realistic assessments. No major economic or political disturbances in the LMB.
2. Scenarios and regional master plan findings on required adjustments of rules and regulations as well as the needed	Adequate information available to make realistic assessments.

institutional changes	
3. Long-list of recommended investment projects and identification of public-private partnerships and potential foreign investors	Regional masterplan and scenarios completed. Access to adequate information on planned investment projects in other transport modes. No major economic or political disturbances in the LMB.
4. Report findings including a long list of rural investment projects including suggestions for their financing.	No major economic or political disturbances in the LMB. Interest in development of rural waterborne transport within MRC governments. Navigation sector administrators and officials are aware of and interested in transferring benefits to rural population
5. EIA and SIA system in place. Promotion campaigns conducted	Navigation sector administrators and officials are aware of and interested in transferring benefits to the Basin population and securing the river environment.

Outputs	**Indicators**	**Means of Verification**	**Assumptions**
1.1 Traffic and trade scenarios	The most realistic traffic and trade scenarios for cargo and passengers identified	Scenario reports and minutes from NWG/AB	Availability of and access to data and information
1.2 Master plan for development of the regional and rural waterborne transport	Mekong Navigation Master plan containing clear recommendations and prioritizations prepared for approval by MRC JC and Council.	Mekong Master Plan priority list of projects and initiatives and JC/Council minutes	Navigation Advisory Body agrees with the proposed plan
1.3 Evaluate the socio-economic outcome of the development of both regional and rural waterborne transport	Baseline surveys conducted and guidelines for targeted support to small-scale operators and EIAs formulated	NWG/AB approval of guidelines	Availability of and access to data and information
1.4 Formulate recommendations for prioritised investment projects in the inland waterway infrastructure	Priority of investment projects approved by MRC JC	Minutes from JC meetings	Navigation Advisory Body agrees with prioritised list
1.5 Identify sources of finance for the recommended investments	Report that Identifies financial sources and analyses potential financers interest	Desk studies of and Interviews with potential financers	Donor's consortium has been informed throughout the formulation of the plans

Subcomponent 2: Supporting Projects			
Immediate Objective			
(2) To demonstrate the advantages and potentials of the waterborne transport sector and disseminate essential information to relevant stakeholders with a view to change misguided perceptions and promote public and private investments in this sector.			
Indicator			
The awareness and better understanding of the potential users (including private sectors), investors and other stakeholders of the importance of waterborne transport raised			
Means of Verification		**Assumptions**	
Public and private investments in the navigation sector. Newspaper articles		No major economic or political disturbances in the LMB. Support from MRC governments, IFIs and other stakeholders to make cost-efficient investments	
Outputs	**Indicators**	**Means of Verification**	**Assumptions**
2.1 Master Plan for Navigation in Cambodia	Master plan formulated and approved	Minutes and press releases indicating CNMC and MPWT approval	Coordination with other initiatives in the region is working well
2.2 Improvement of the navigation conditions on the Mekong River in Viet Nam	Study specifying needs for improvements conducted and published	Report containing prioritised recommendations, detailed description of the work to be carried out and their costs	Coordination with other initiatives in the region is working well
2.3 Pilot project in the Lao PDR: Impact of morphological changes and sediment logy on the navigation operations and infrastructure Impact of the navigation operations and infrastructure on morphological changes, including bank erosion.	Baseline study determining the morphological changes and the interrelation between navigation and bank erosion published	Report published by LNMC, MRCS, MPTC and donor.	Both Thailand and Lao PDR work jointly on this activity
2.4 Pilot Projects on tourism and Navigation	Lessons learned from existing tourist operations collected and synthesised into basin-wide recommendations for tourism development	Assessment report containing strategic regional recommendations	EIA's are positive

2.5 Institutional strengthening, capacity building and training	Capacity needs identified and capacity development plan agreed and implementation started	Assessment report approved and trained staff using competencies	Human resources are available

Annex 4 Acronyms

ADB	Asian Development Bank
ASEAN	Association of Southeast Asian Nations
BDP	Basin Development Plan (of MRC)
CCNR	Central Commission for the Navigation on the Rhine
CNMC	Cambodia National Mekong Committee
CSO	Civil Society Organisation (= Non Government Organisation)
CWG	Country Working Group (= National Counterpart to the NWG at the Mekong River Commission Secretariat)
DGPS	Digital Global Positioning Systems)
EEC (EU)	European Economic Community (European Union)
EIA	Environmental Impact Assessment
EP	Environment Programme (of MRC)
ESCAP	The Economic and Social Commission for Asia and the Pacific
EU	European Union
FMP	Flood Management Programme (of MRC)
FOI	Field of Intervention
GIS	Geographic Information System
GMS	Greater Mekong Sub region
HCMC	Ho Chi Minh City
IBRD	International Bank for Reconstruction and Development
IFC	International Finance Corporation
ILO	International Labor Organisation
IMO	International Maritime Organisation
IWT	Inland Waterway Transport
LA	Line Agencies
LAD	Least Available depth
LMB	Lower Mekong Basin
LMRB	Lower Mekong River Basin
LNMC	Lao National Mekong Committee
LAD	Least Required Depth
MPM	MRC Programme Manual
MRC	Mekong River Commission
MRCS	Mekong River Commission Secretariat
MRCS NPO	Mekong River Commission Secretariat Navigation Programme Office
NAB	Navigation Advisory Body
NAP	Navigation Programme
NEG	Navigation Expert Groups
NGO	Civil Society Organisation (Non-Government Organisation)
NMC	National Mekong Committee
NPIU	Navigation Programme Implementation Unit
NPO	Navigation Programme Office
NSG	Navigation Sub-working Group
NWG	Navigation Working Group
ODA	Overseas Development Agency
PDR	Peoples Democratic Republic
PIANC	The International Navigation Association
PPAP	Phnom Penh Autonomous Port (Cambodia)
PRC	Peoples Republic of China
PRP	Police River Patrol
PRSP	Poverty Reduction Strategy Papers
PRSP	Poverty Reduction Strategy Papers
RRU	River Rescue Unit
SEA	Strategic Environmental Assessment

SIA	Social impact Assessment
SMS	Safety Management System
TAN	Transport Area Network
TNMC	Thai National Mekong Committee
UN	United Nations
UNCTAD	United Nations Conference on Trade and Development
UNDP	United Nations Development Programme
UN-ECE	United Nations Economic Commission for Europe
UNEP	United Nations Environment Programme
UN-ESCAP	United Nations Economic and Social Commission for Asia and the Pacific
US	United States
VIWA	Viet Nam Inland Waterway Administration (Viet Nam)
VNMC	Viet Nam National Mekong Committee
WB	World Bank
WGN	Working Group on Navigation
WUP	Water Utilization Programme (MRC)
WUP-FIN	Finish Team under the Water Utilization Programme