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Updated Project Information Document (PID)

Report No: AB93

Project Name	EAST ASIA AND PACIFIC - 4E-Marine Electronic Highway
Region	East Asia and Pacific Region
Sector	Ports, waterways and shipping (100%)
Theme	Regional integration (P); Pollution management and environmental health (P)
Project	P068133
Borrower(s)	GOVERNMENTS OF INDONESIA & MALAYSIA
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Environment Category	C (Not Required)
Date PID Prepared	March 4, 2004
Auth Appr/Negs Date	April 29, 2004
Bank Approval Date	June 24, 2004

1. Country and Sector Background

10. Although the Straits of Malacca and Singapore are shallow, hazardous to navigation, and characterized by narrow channels, irregular tides and shifting bottom topography, they are the preferred international route for the majority of ships en route between the Persian Gulf and the Far East, mainly because the two alternative routes (Lombok-Makassar and Sunda Straits) add several days the voyage. Recent enhancements in maritime safety infrastructures and regulatory mechanisms in the Straits have improved navigational safety, vessel traffic flow and the overall management of the Straits as a major international sea lane. However, the volume of international traffic passing through the Straits or calling at its ports is already heavy for such a confined and environmentally-sensitive waterway and is increasing steadily. In 1997, approximately 104,000 vessels transited the Straits of Malacca and Singapore, and in 2001, 146,265 vessels (>75 GT) arrived at the port of Singapore. Vessel arrival statistics from 1995 to 2001 showed an annual average increase in arrivals of 5.96% for the Port of Singapore and 10.58% for Port Klang. There is also substantial volume of cross-Straits traffic between the three littoral States for trade and fishing. Notwithstanding the current navigation system, the threat of collision and grounding and of consequent environmental damage is significant and is rising, and the cost of serious accidents is very high, which justifies further action to reduce them.

11. Although the three littoral States of Indonesia, Malaysia and Singapore have oil spill response capabilities, such as oil spill contingency plans and response facilities, including a cooperative response agreement, a series of recent serious shipping accidents have highlighted the need for a better traffic management system to reduce their incidence. Another lesson learned from recent incidents is the need for quicker deployment of spill response equipment and manpower and more efficient institutional arrangements. In addition to the more rapid response, immediate access to information on the resources at risk, on spill location and on the locations of stockpiled response equipment can also contribute to the effectiveness and efficiency of an oil spill response operation. Better and more efficient communication is the key to achieving a successful response in the event of an oil spill, but an effective ship monitoring system is also important to prevent such incidents, as well as to serve as early warning.

12. Recent incremental improvements to existing navigational aids and facilities in the Straits of Malacca and Singapore have not reduced the incidence of ship collisions and grounding or of chemical and oil spills. Although risk assessment of tankers in the Straits based on tanker accidents in the period

from 1982 to 1993 showed a relative constant risk at 0.029% (± 0.03=95%CL) [Malacca Straits: refined risk assessment, GEF/UNDP/IMO Regional Programme, 1999], a steady number of serious vessel accidents still occurred in recent years. For example, several vessel groundings and collisions occured in the past two years, some resulting in spillage of oil, such as the 'Natuna Sea' (October 2000) and 'Singapora Timur' (May 2001). Total compensation claims for the 'Natuna Sea' from the 3 littoral States were US$127,003,226, but only 8.48% was paid due to unsubstantiated and disallowed claims, especially on environmental and fishery-related damages (Annex 2). Reliable information on the Strait's natural resources, particularly its economic value, is certainly important and urgently needed in order to better quantify the economic losses incurred in the event of a chemical or oil spill in the Straits.

13. The increasing volume of maritime traffic and port development in the Straits, as well as the increasing mix of other uses (e.g., marine recreation, fisheries), are seriously taxing the capacity of the Straits to handle such growth and diverse uses safely and efficiently. From the maritime safety standpoint, continued growth will lead to more congestion and will require intensive monitoring, especially along critical areas of the TSS. The effects of this congestion are exacerbated by weather-related conditions, including the tidal regime. This combination causes ship delays or diversions, more conservative loading and higher risk of collision, allision and grounding. The environmental consequences of the aforementioned situations are increased risk in the number and magnitude of oil spills, discharges of bilge waters and chemical spills from ships. These facts have motivated the littoral States to adopt an innovative and more effective approach to improving the management of maritime traffic and marine environment protection in the Straits, which is to establish a Marine Electronic Highway (MEH) system.

2. Objectives

5. The program's development objectives are to increase the efficiency of marine transport through the Straits, reduce its negative environmental impacts, and strengthen the conservation and mangement of neighboring marine and coastal environments. The MEH would achieve these objectives by: (a) reducing the frequency of ship collisions in the Strait's congested sea lanes and ports; (b) making marine navigation in the Straits safer and therefore more often feasible in poor weather; (c) tracking and monitoring vessel operations, such as illegal bilge water releases, in the Straits, with benefits for the management and protection of marine and coastal resources; and (d) testing the feasibility of a MEH fund to co-finance the system and to support coastal and marine resource conservation and management in the Straits area. The program will thus generate coastal development and environmental benefits for the littoral states; global environment benefits by reducing the pollution of shared marine water bodies; and economic benefits for the international shipping industry and their billions of customers.

3. Rationale for Bank's Involvement

Bank and GEF support for the MEH Demonstration project will make it possible to establish the conditions under which the MEH system can be viable both technically and financially, then paving the way for further development along international sea lanes. From then on, Bank and GEF support, in cooperation with IMO, will facilitate the dissemination of knowledge and experience so as to spur the replication of the MEH system, in particular in regions where developing countries will need institutional support and capacity building to be able to play their part in establishing the system and to reap the expected benefits, both in terms of more economically efficient international transport and of more sustainable marine environment protection policy.

4. Description

Essentially, the MEH Demonstration Project has 7 strategic components aimed at addressing the aforementioned issues:

Component 1 Establish the Marine Electronic Highway and demonstrate its technical functionalities on navigation safety and marine environment protection for the Straits of Malacca and Singapore;
Component 2 Facilitate the integration of marine environment systems and data flow and information exchange through the MEH system;
Component 3 Develop the operational and administrative mechanisms for the sustainable management of the MEH system;
Component 4 Evaluate the financial, social and economic benefits and legal issues of the MEH system;
Component 5 Promote awareness and participation of relevant stakeholders to support the MEH system;
Component 6 Strengthen national and regional capacity in maritime safety and marine environment protection for the sustainable management of the MEH system; and
Component 7 Implement transitional activities to develop the first phase MEH Full-scale Development Project and assess the feasibility of establishing the second phase MEH system extending to other sea areas in the East and West of the Straits.

The logical framework matrix in Annex 1 provides a summary of analysis on the outputs, methodology, verifiable indicators to measure impacts and the assumptions made to implement the MEH Demonstration Project.

Component 1 - Establishment of MEH System
Component 2 - Integration of Marine Environment Protection System
Component 3 - Development of Operational and Administrative Mechanisms
Component 4 - Evaluation of Financial, Social and Economic Benefits and Legal Issues
Component 5 - Promoting Participation of Relevant Stakeholders
Component 6 - Capacity Building, Evaluation and Project Management
Component 7 - Implement Transition to Full-scale MEH Development and Feasibility of Second Phase

5. Financing

Source (Total (US$m))

BORROWER/RECIPIENT ($1.93)
GLOBAL ENVIRONMENT FACILITY ($8.00)
FOREIGN PRIVATE COMMERCIAL SOURCES (UNIDENTIFIED) ($5.52)
Total Project Cost: $15.45

6. Implementation

The Project Steering Committee (PSC) established during the PDF Block B Grant period will continue to act as the overall regional body to oversee the implementation of project activities in both the demonstration and the full-scale stages of the MEH Project. The PSC will provide the institutional arrangement for the development of the managing tool, which will operate, administer and manage the MEH system on a sustainable basis under a cooperative agreement among relevant stakeholders of the Malacca Straits.

Four Technical Committees and two Working Groups will be established in the course of implementing the MEH Demonstration Project to evaluate various technical issues and outputs of the project for the purpose of refining the activities for the MEH Full-scale Development Project, which will cover the entire Straits. The Technical Committees and Working Groups will be composed of relevant stakeholders of the MEH Project including potential users under the direction of the PSC. The PSC will be developed into the governing body or managing tool (i.e., corporate body) of the MEH system. This corporate body will operate, administer, maintain and manage the MEH system within the public

private partnership framework. It is envisaged that the corporate body will be fully commissioned at the latter part of the second stage of the MEH Project.

Monitoring and evaluation of project activities will include milestones for each major activity with a corresponding specific timeframe to complete. In addition, there will be annual reviews by the Project Steering Committee as well as bi-annual internal reviews of project implementation as well as the results and outputs. The findings of these reviews will be used to assess project progress and the need to modify approaches and resources. The key performance indicators as shown in Annex 5 will be used to gauge the outputs and impacts of the MEH Demonstration Project.

In addition, review and evaluation of the project activities will be undertaken by four Technical Committees (TC) to address relevant issues on the implementation of the project and will come under the guidance and direction of the Project Steering Committee (PSC). Two Working Groups (WG) will be established at some stage of the project life to evaluate the impacts of the demonstration project as well as the formulation of the proposal for the MEH Full-scale Development Project. The technical committees and working groups will be composed of representatives from relevant stakeholders as well as consultants hired under the project. The project will participate in the annual GEF Project Implementation Review (PIR).

A Project Management Office will be established in the region to administer and manage the project onsite and will have a Project Manager and four experts. The staff will be working closely with the national agencies staff assigned to the MEH Data Centres and oversee/coordinate the works of the consultants as well as providing support to the PSC, TC and WG.

7. Sustainability

Since the establishment of the Traffic Separation Scheme in the Straits of Malacca and Singapore, various regional and international workshops and conferences on the Straits had debated on how to distribute the financial burden of the littoral States to users (i.e., direct user States and non-state users) but without any concrete and practical solutions.

The establishment of the MEH system in the Straits provides for a practical and tangible solution that littoral States, users and other stakeholders can collectively understand and support. The creation of the MEH Fund can further appeal to the stakeholders, especially the littoral States due to regional benefits that it could generate through the Environmental Trust Fund (see purposes of the MEH Fund). At the national level, the Fund could subsidize activities that will enhance environmental monitoring, especially in coastal areas and ecologically sensitive sea areas or habitats, capacity building and integrated information sharing for environmental impact assessment, risk assessment and management including damage assessment (e.g., for oil spill damage compensation).

8. Lessons learned from past operations in the country/sector

The concept of a marine electronic highway (MEH) was initiated in Canada in the early 1990s with the application of digital technology to navigation, particularly in the development of electronic navigational charts and the Electronic Chart Display and Information System (ECDIS). The core of the Canadian version of the MEH was the integration and interconnection of the ECDIS and the Automatic Identification System (AIS) with powerful shore-based databases to provide a basis for optimised shipping traffic management decisions. Since 1995, the ECDIS has been widely deployed in the Great Lakes and the St. Lawrence River corridor with considerable success, especially in navigating through treacherous waters even in heavy fog conditions. However, standards for electronic navigational charts and the unavailability of type approved ECDIS during this early period led to the use of nonconformal ECDIS by the Canadian shipping sector. Thus, many Canadian ships plying the Great Lakes and the St. Lawrence Seaway had difficulty in switching to standardized technology subsequent to the commercial launching of the first type approved EDCIS in 1999 and the wider adoption of the IHO S-57 (electronic chart standard) due to technical and financial constraints. Furthermore, central government support waned. Consequently, the MEH concept remains to be realized. Nevertheless, the pioneering efforts in Canada on digital navigation had led to the widespread adoption of electronic navigational charts and the ECDIS and subsequently, by the world shipping industry accelerating the commercial development of electronic maritime technology and the necessary international standards. Since 1999, there are several type-approved ECDIS in the market and many national hydrographic agencies have S-57 ENC production capability.

The utility of ECDIS and ENCs is now well accepted in the maritime industry, being able to increase the safety net of vessels and improve commercial performance (e.g., in areas with restricted under keel clearance and water depth). Placing these technologies in the framework of the MEH system will provide greater benefits not only for the shipping industry but also for the marine environment sector. From the marine environment protection standpoint, for instance, the reduction of vessel accidents and online availability of marine information could lead to improve monitoring and response to marine environmental incidents, lower response and clean-up costs and better quantification of damages as well as enhance management of the coastal and marine resources in the Straits.

9. Environment Aspects (including any public consultation)

Issues : The marine environment protection system (EMPS) component of the MEH system is an amalgamation of several models and systems. The demonstration project will evaluate several EMP models and systems for integration into the MEH system including meteorological and oceanographic systems. The EMPS that will be evaluated are the following: 3-Dimensional hydrodynamic model; oil spill trajectory and fate model; coastal and ocean monitoring systems (e.g., tides and current); environmental impact assessment; oil spill damage assessment model and sensitivity mapping. The ENCs that will be produced from the hydrographic survey using multi-beam technology will be used as base maps for these models including the sensitivity mapping.

Existing models and systems in use by relevant authorities of the littoral States for marine pollution prevention and response, environmental monitoring and coastal resource management will be evaluated and harmonized for incorporation into the MEH system as appropriate. New models and systems will also be included such for sandwaves monitoring and chemical spill response. Aside from the technical evaluation of the EMPS, related activities in other components will be implemented to promote the participation of relevant stakeholders in the environmental sector in the project and also to ensure long term utility of the MEH system for marine environment protection.

10. List of factual technical documents:

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Note: This is information on an evolving project. Certain components may not be necessarily included in the final project.