PROPOSAL FOR REVIEW

PROJECT TITLE:	**INDONESIA: CORAL REEF REHABILITATION AND MANAGEMENT PROJECT**
GEF FOCAL AREA:	Biodiversity
GEF ELIGIBILITY:	Under financial mechanism of Convention (Biodiversity Convention ratified August 23, 1994)
TOTAL PROJECT COSTS:	US$60 million (estimated)
GEF GRAND TOTAL:	US$12.28 million
GEF FINANCING:	US$12.0 million
COUNTERPART FINANCING:	US$13-14 million
IBRD LOAN:	US$25 million
CO-FINANCING (AUSAID):	US$9-10 million (A$12 million)
ASSOCIATED PROJECTS:	Coral Reef Rehabilitation and Management Project (Eastern Indonesia) - IBRD/AusAID; Coral Reef Rehabilitation and Management Project (Western Indonesia) - Parallel project, ADB
GEF OPERATIONAL FOCAL POINT:	Dr. Ir. Surna T. Djajadiningrat, Assistant Minister, State Ministry for Environment.
GEF IMPLEMENTING AGENCY:	World Bank
LOCAL COUNTERPART AGENCY:	National Development Planning Board (BAPPENAS); Indonesian Institute of Sciences (LIPI).
ESTIMATED APPROVAL DATE:	February 1998
PROJECT DURATION:	Six years
GEF PREPARATION COSTS:	US$280,000 (PDF Block B Grant)

INDONESIA
CORAL REEF REHABILITATION AND MANAGEMENT PROJECT

COUNTRY AND SECTOR CONTEXT

Biological Diversity and Importance

1. Indonesia is the world's largest archipelago, with more than 17,000 islands and 81,000 km of coastline. It contains approximately 25 percent of the world's fish species, 17 percent of the bird species, and 12 percent of the mammal species. The coastal zone is rich in coral reefs, seagrasses, mangroves, estuaries, and small island ecosystems. Indonesia's coral reefs (approximately 75,000 km^2) comprise 12 to 15 percent of the world's total, and, with 75 genera and 350 hard coral species recorded, are at the epicenter of the world's coral diversity.

2. Coral reefs are a major productive and aesthetic asset in Indonesia. Healthy reefs can produce on average 25 metric tons of marine products per hectare per year, and are therefore a key food and income source for the numerous (67,500) coastal villages. These communities rank among the poorest in Indonesia, with a 1992 per capita income of US$150, as compared to US$220 for agricultural households. Reef organisms are also highly prized in international markets, where premium live coral fish are typically traded at US$50 to US$200 per kg. In addition, coral reefs are an important asset for the marine tourism industry. In the Bunaken Marine Park, for example, tourism visitation has grown by 27 percent annually, with annual revenues of US$12 million. While tourism value is considerably smaller in other areas and is often not captured locally, these revenues nevertheless attest to coral reefs' potential value to Indonesia's economy.

3. Despite their potential, coral reefs are under increasing threat: available data indicate that only 30 percent of Indonesia's reefs are in good condition[1], primarily due to destructive poison and blast fishing, coral mining, sedimentation, pollution, and over-extraction of marine products. In recent years, there has been a marked increase in the use of sodium cyanide -- a stun poison highly toxic to coral polyps - for the profitable live fish restaurant trade in Asia. Without immediate interventions, it is likely that large reef areas will suffer irreversible damage in the near future.

Government Strategy

4. Indonesia has supported a number of recent initiatives to improve coastal resource management. In 1992, the Ministry of Environment (LH) produced a National Strategy and Action Plan for Coral Reef Ecosystem Conservation and Management. It also launched the Sustainable Marine Program (*Program Laut Lestari*) in 27 provinces, and a "Sea Watch" (*Siskamla*) program to foster community participation in enforcement. The Indonesia Biodiversity Action Plan (1993) and Indonesia's Agenda 21 (1996) emphasize the need for community-based marine resources management. Indonesia plans to extend its marine protected areas (MPAs) to 30 million hectares by the year 2000, a full tenth of its sea territory. Indonesia also won the bid to host the International Coral

[1] Based on live coral cover. This measure is a weak indicator of reef condition, but is the only published indicator of Indonesian reefs' condition.

Reef Symposium in Bali in the Year 2000, and is hosting the Experts' Meeting of the Jakarta Mandate on Marine and Coastal Biological Diversity in March, 1997.

5. Despite these initiatives, many constraints remain: responsibility for managing Indonesia's marine areas is dispersed through numerous government agencies at the national, provincial and district levels. Both the regional governments as well as the Directorate General of Forestry Protection and Conservation (PHPA), for example, are responsible for protected area management, but the Navy and police are responsible for enforcement. Policies and regulations follow sectoral priorities and fail to properly address coastal issues. Information required for marine management is fragmented, not standardized, and difficult to access. Forty-nine marine protected areas have been designated, but the majority of management plans have yet to be implemented, and there is very little effective enforcement. Adequate institutional capacity has yet to be developed at the national, regional, and non-governmental organization (NGO) levels. In an attempt to address some of these constraints, the Government of Indonesia (GOI) has established a high-level, inter-ministerial National Marine Council, chaired personally by President Soeharto. The Council will support national efforts to improve marine resources management. An upcoming presidential decree will also decentralize coastal management to the provincial governments. This legislation will improve policy coordination and provide a foundation for local management regimes.

Project Background and Government Commitment

6. GOI has recognized that coral reefs and associated resources play an important role in meeting social and economic development goals, and has established the Coral Reef Rehabilitation and Management Program (COREMAP) as a new national initiative. The program targets ten provinces in Indonesia, and will involve two separate parallel projects, one financed by World Bank, and the second by the Asian Development Bank (ADB), with co-financing from AusAID still under discussion. The World Bank-funded project would support the national COREMAP program, as well as site activities in five Eastern Indonesian provinces (Irian Jaya, Maluku, South Sulawesi, and East and West Nusa Tenggara). The ADB-funded project would support coordinated interventions in three provinces in Western Indonesia (Riau, West and North Sumatra), and two provinces in the East (North and Southeast Sulawesi). While this proposal pertains primarily to the first project, one of the four GEF-eligible sites (Wakatobi) is located in an ADB-funded province, and is included under the present proposal. The GEF modality for implementation and grant execution (including possible ADB execution) will be discussed with GOI at pre-appraisal stage.

7. GOI is highly committed to the COREMAP initiative. To date, it has allocated Rp. 24 billion (US$10 million) in counterpart funds to COREMAP's preparation. GOI has paid for extensive socio-economic and ecological surveys in priority sites, and managed the technical assistance for project preparation. The Government has also established an inter-agency preparation team in February 1995, and, more recently, a national COREMAP Steering Committee (para. 20). In early 1996, GOI created project working groups in all target provinces. In recognition of the need to strengthen project guidelines and finalize preparation, GOI has allocated Rp. 14 billion (US$6 million) in counterpart funds for pre-implementation activities during fiscal year 1997-98. These will fund, among others, start-up activities in three pilot sites, program guidelines' development, and field facilitators' training.

PROJECT OBJECTIVES AND DESCRIPTION

8. ***Project Goal and Development Objective***. The long-term COREMAP **goal** (global objective) is the protection, rehabilitation, and sustainable use of Indonesian coral reefs and associated ecosystems. The proposed project will, together with other initiatives, *contribute* to this goal by supporting the national COREMAP program. The project's specific **development objective**, however, is to establish an operational coral reef management system[2] in priority locations in five Eastern Indonesia provinces. These locations include approximately 5 percent of Indonesia's coral reefs.

9. ***Problems and Strategy.*** The most important threats to reefs in project locations are overfishing, destructive practices (bombing and cyanide fishing), coral mining, local pollution and sedimentation, and tourism development. The respective importance of these threats varies from site to site. The project will address these threats through a dual strategy that combines locally-based management with strengthened policies, enforcement and human resources capacity at both national and regional levels. Reef rehabilitation will be addressed through prevention of further degradation and natural regeneration. The specific threats and strategy proposed for GEF-funded sites are summarized in a matrix at the end of the proposal.

10. ***Project Outputs.*** The project proposes to produce the following key outputs in support of the development objective:

- An operational national COREMAP program strategy;
- Strengthened policies for coral reef management;
- Empowerment of coastal communities to design, implement and monitor coral reef management plans in priority project locations;
- Direct income generation opportunities for local communities (e.g. involvement in eco-tourism);
- Strengthened enforcement in priority project locations;
- Strengthened human resources capacity for coral reef management;
- A public awareness program launched at the national and regional levels; and
- A coral reef management information system to support on-site management.

11. ***Project Components.*** The overall project (including loan contribution) will be implemented over six years. The specific costs and activities will be adjusted further at pre-appraisal stage (June 1997). It is envisaged, however, that the project will comprise one major investment component (CBM) and four supporting components, as follows:

[2] An operational system is defined as effective, locally-based coral reef management, supported by an enabling institutional, enforcement, legal, and monitoring framework.

(a) ***Community-based Management (CBM)*** (estimated at US$17.0 million). This component would be implemented in a maximum of 12 sites and 40 priority locations in Eastern Indonesia[3], both within and outside MPAs. It would provide the support structure, skills and resources required to empower local communities to manage their reef resources. The project would (i) train and deploy village-level facilitators and field managers to help communities form partnerships with relevant stakeholders and develop management plans for target reefs; (ii) provide village-level training and awareness; (iii) help implement reef management strategies (primarily sanctuaries, or closed areas, in parts of the reef) through equipment, training, and technical advice to local management institutions; (iv) train and motivate village 'reef watchers' and provide them with basic surveillance equipment (e.g. radios and binoculars); (v) help identify sustainable alternative income generation opportunities (e.g. mariculture, eco-tourism, micro-enterprises, and farming) and fund them through limited subsidies and improved access to credit; and (vi) provide reef-saving infrastructure necessary to control local pollution sources. While village facilitators would be deployed in all project locations, alternative income generation would be conditional upon a reef management plan and consistency between the proposed activities and reef conservation objectives. Village surveillance (*Siskamla*) would be linked to a site-level enforcement system supported under the law enforcement and policy coordination component. The CBM component would be first tested in three pilot locations, and expanded to the remaining locations as lessons of experience became available. An adaptive management approach, whereby management rules would be regularly assessed and adjusted, would be encouraged. *GEF incremental costs for this component are estimated at US$4.0 million.*

(b) ***Law Enforcement and Policy Coordination*** (estimated at US$9.0 million). This key support component would be implemented at both the national and regional levels and focus on strengthened policies and enforcement. The project would (i) strengthen the national COREMAP program strategy; (ii) develop and ratify a national policy for coral reef protection and management, with particular emphasis on mobile threats (poison and explosives fishing); (iii) provide legal support to CBM, in particular through local ordinances (*SKs*) recognizing communities' user rights and local management plans; and (iv) strengthen enforcement of project sites based on a monitoring, control, and surveillance (MCS) system. The MCS system would be used by local enforcement agencies to support village-level surveillance (see above). The project would supply MCS equipment, training and incremental staff required to address present enforcement weaknesses. *GEF incremental costs would amount to US$3.0 million.*

(c) ***Human Resources Development and Institutional Strengthening*** (estimated at US$14.0 million, including Technical Assistance). This component would develop both the human resources as well as the institutional capacity for coral reef management. The component would include (i) project management at the national and regional levels; (ii) technical assistance for the national and provincial teams; (iii) development of program guidelines, including manuals for community-based

[3] Project **sites** are classified as ecological management units from the point of view of coral species recruitment and distribution. Within these sites, COREMAP would be active in target **locations**, generally the size of a small island or a group of villages. The project would first target *key* locations within a site, extending later to *expansion* locations. COREMAP sites were selected based on IUCN criteria and provincial priorities; locations were selected to represent (a) degraded areas with potential for rehabilitation; (b) locations with potential for sustainable uses, such as ecotourism or mariculture; and (c) relatively pristine locations with potential to serve as coral reef recruitment sources.

for village leaders, project managers, and decision makers to help disseminate information and learn from lessons of experience; and (iii) project management assistance to support GEF activities. *Co-financing of approximately US$13.0 million in baseline costs would be provided*.

(d) ***Monitoring and Research*** (US$1.5 million). GEF assistance would finance incremental equipment, technical assistance, applied research and workshops required for (i) strengthening links between COREMAP and international coral reef monitoring networks; (ii) an independent evaluation of project impact on reef ecosystems; and (iii) applied research contributing to improved coral reef management, such as determining the location of coral reef "sources" and "sinks". *Co-financing of US$8.5 million in baseline costs would be provided*.

(e) ***Public Awareness*** (US$2.5 million). GEF assistance is proposed for public campaign contracts, workshops, awareness and educational materials, field guides, and prizes to support (i) NGO involvement in provincial and local-level awareness campaigns; (ii) a system of yearly awards and public ceremonies rewarding COREMAP participants; (iii) briefing and workshops for decision makers and the press; and (iv) co-financing of a national level coral reef awareness campaign. *Co-financing of US$7.5 million in baseline costs is proposed for this component.*

PROJECT COSTS AND FINANCING

16. The total project costs are estimated at US$60 million. The incremental costs associated with global benefits are estimated at US$12 million and are analyzed in Annex 1. IBRD would contribute a loan of US$25 million. AusAID, through a parallel co-financing arrangement, would contribute approximately US$9-10 million. A GOI counterpart contribution of US$13 to US$14 million is envisaged. The final incremental costs will be agreed at pre-appraisal and may be revised downwards based on final cost estimates and project design.

INSTITUTIONAL FRAMEWORK AND PROJECT IMPLEMENTATION

17. The proposed institutional framework is as follows:

18. ***Site Level***. The project would select, train, and deploy facilitators in target villages, according to criteria set by the national Secretariat. The facilitators would mobilize existing community groups (*Pokmas*), in partnership with relevant stakeholders (NGOs, private sector operations and/or local government), to develop and implement management plans for target project locations. These activities would be assisted and monitored by Site Managers appointed by the project's national Secretariat, who would ensure coordination between the field and the project teams. Qualified NGOs -- most likely under contract with the provinces -- would take an active part in community training, awareness, and facilitating community-based management.

19. ***Regional Level.*** Regional level support would be provided by a Steering Committee chaired by the Deputy Governor, and include members from technical agencies and NGOs. Regional project offices would be established, building upon the existing provincial project preparation teams. Community interests would be represented by NGO partners. The regional offices would be staffed with full time professionals and supported by technical assistance. Current GOI plans are to establish project units at both the provincial as well as district levels. This will require further discussion with

donor agencies, with a view to simplify project implementation as well as to take into account GOI's decentralization policies.

20. ***National Level*** A National COREMAP Steering Committee has been established, with representatives from the National Development Planning Board (BAPPENAS), Indonesian Institute of Sciences (LIPI), State Ministry of Environment (LH), Directorate General of Regional Development (DG Bangda), Ministry of Finance, PHPA, Directorate General of Fisheries, Directorate General of Tourism, Ministry of Information, and the Indonesian Navy. This high-level committee would serve primarily as a guidance and policy body for the COREMAP program.

21. BAPPENAS would be the overall coordinating agency for project implementation. A National Project Secretariat would be established within BAPPENAS to oversee overall implementation. It would include full-time staff seconded from the key member institutions, supported by technical assistance. During the initiation phase (years 0-2), the Secretariat would establish five working groups, responsible for preparing guidelines for each of COREMAP's components. The national Secretariat would play a strong role in coordinating implementation during this initial phase, but would gradually transfer responsibilities to the regions during the acceleration phase (years 3-4), at which time the national-level working groups would be replaced by an integrated expert team responsible primarily for policy and strategy.

RATIONALE FOR GEF FINANCING

22. The proposed project is consistent with GEF's Operational Strategy, in particular the Operational Program on Marine, Coastal and Freshwater Ecosystems. It supports *in situ* conservation and sustainable use of biodiversity consistent with Article 8 of the Convention on Biological Diversity and Agenda 21. It responds to guidance from the Second Conference of Parties (COP 2) and the Jakarta Mandate which gives special attention to coastal and marine ecosystems. It will also support Indonesian activities in contribution to the International Coral Reef Initiative (ICRI). By focusing on Eastern Indonesia, the project will help manage an area which is believed to contain the richest coral reef, fish, and marine invertebrate biodiversity in the world.

23. The project focuses on a priority ecosystem identified in National Biodiversity Action Plan. It builds on experiences and lessons learned from earlier GEF projects in Indonesia. It responds to COP guidance by promoting conservation and sustainable use of coastal ecosystems. The project responds to COP 3 guidance with innovative measures to conserve and sustainably use biodiversity, including economic incentives, strengthened involvement of local and indigenous communities in coral reef management, and integration of social dimensions related to poverty. The project also strengthens local capacity for community-based management, promotes intersectoral cooperation, builds awareness of biodiversity values, and contributes to inventory and information exchange relevant to the clearing house mechanism for global coral reef monitoring.

24. The project will provide support for conservation and management of regionally, and globally-important reefs and marine protected areas identified in Indonesia's *Marine Conservation Atlas* and IUCN's *Global Representative System of Marine Protected Areas*. In addition to coral reefs, the project will contribute to the conservation of migratory marine species such as turtles and dugongs, and

address issues which affect endangered fish populations as part of an international campaign against cyanide fishing. The GEF focal point endorsement letter is attached in Annex 2.

PARTICIPATION AND SUSTAINABILITY

Participation

25. GOI has from the start been responsible for COREMAP's preparation, including executing a PHRD and a GEF-PDF grant, and managing the technical assistance for project preparation. Participation and local consultation activities have involved:

(a) Establishing provincial preparation teams, which include University and local NGO representatives, and in several sites the Navy and the local police. The provincial teams have selected project sites, prepared project proposals, and participated in six national workshops organized by the national group to discuss project design. National team's visits to the sites have included extensive consultation with local communities, and meetings with NGOs, enforcement authorities, diving clubs, private industry, and religious and informal leaders.

(b) An extensive socio-economic baseline survey was conducted in 17 priority project locations paid entirely out of counterpart funds (ca. US$40,000 per province). The survey was designed and managed by LIPI's Centre for Population and Manpower Studies, and contracted out to regional Universities.

(c) The technical assistance team, in collaboration with local NGOs, conducted participatory rural assessment (PRA), a problem tree, objective tree and stakeholder analysis in all sites targeted during preparation.

(d) The Indonesia Biodiversity Foundation (Kehati), supported by a GEF-PDF grant, identified and funded local NGO proposals to assist in project preparation. NGO activities have included awareness campaigns, identification of alternative income generation opportunities, and management plan preparation.

26. The project team has emphasized community empowerment as the basis for locally-based management. Communities and their local partners (including, as appropriate for each location, private sector, NGOs, and local government) would therefore be the primary designers and implementors of CBM activities, helped by village facilitators and technical advisors, and according to agreed funding guidelines. The project design has also recognized that, in order for CBM strategies to succeed, they will require strong enforcement and logistic support from local governments and enforcement authorities. Competing stakeholders have been identified and the final project design will integrate conflict resolution mechanisms to deal with access rights. The project implementation will be consistent with the Bank's Operational Directives.

Sustainability

27. The strongest assurance of COREMAP's sustainability is GOI's high commitment to the program -- as evidenced by its leadership in project preparation, large counterpart financing (over US$10 million committed to date), and high level of political support. GOI sees COREMAP as a new national program to save one of its top priority ecosystems. As such, funding and institutional support for the program is expected to continue beyond the life time of the present project. The current thinking on project financing -- to use an upcoming national block grant (*Inpres*) for environmental coordination -- would ensure **financial sustainability**, as *Inpres* funds are associated with long-term national programs and not with specific projects.

28. **Field-level sustainability** will be key to the project success. Many environmental programs in Indonesia are dependent on high levels of subsidies, and communities tend to revert to former practices once subsidies are removed. The project will address this issue by encouraging local reef management institutions to extract and retain revenues from reef utilization. Evidence from other areas -- e.g. Bonnaire -- demonstrates that after an initial period, reef management can pay for itself in the form of higher fisheries and tourism revenues. Indonesia has several examples of user pay schemes which the project could help strengthen: several villages in Maluku, for example, have developed a user fee system, where diving companies contribute to village development funds. In exchange, the villages maintain the reefs and prevent destructive fishing practices. One of the most important barriers for the wider adoption of these systems is the weak legal framework in support of user rights and conflicting regional development policies. The project would help strengthen the framework in support coastal villagers' user rights and local revenue retention.

LESSONS LEARNED

29. The proposed project would be the first World Bank operation to focus exclusively on coral reef ecosystems. However, the World Bank has supported more than 50 projects and programs worldwide with a significant marine or coastal focus. Most of these operations are too recent to extract lessons of experience. The Philippines Central Visayas Regional Project, closed in 1992, included a community-based coastal management component and helped establish village reef sanctuaries. The project completion report concluded that (i) CBM was effective in increasing coastal fishers' productivity and income; but that (ii) sustainability was doubtful without legal means to control access to resources.

30. Lessons from similar operations in Southeast Asia-Pacific and Indonesia show that:

(a) Marine protected areas (MPAs) managed by central government agencies generally suffer from lack of resources, weak enforcement capacity and lack of support from major players. By contrast, local management partnerships between coastal villages and relevant stakeholders have effectively managed small coral reef areas when strongly backed by central and regional governments. The Negros Oriental province in the Philippines, for example, has established 19 village sanctuaries to date, and the model is expanding to other areas. Even though these reef sanctuaries are typically small (less than 50 ha), they can provide a foundation for a network of protected areas required for long-term reef survival;

(b) In order for CBM to succeed, communities should be organized and empowered to manage their reefs. Local commitment can, however, decline rapidly if no action is taken to control powerful external threats. National and regional governments should support CBM systems by recognizing communities' user rights, and effectively containing external threats through enforcement and coordinated policies.

(c) Reef management has been most successful when local stakeholders derive quick and direct economic benefit from reef management, for example, in the form of improved fisheries productivity or tourism spin-off benefits;

(d) Local support should be established first for a limited set of clear and achievable goals of direct interest to local villagers. Early success in achieving these goals can spread rapidly and build capacity to address more complex issues, such as land-based threats;

(e) Research and monitoring systems need to be directly relevant to management needs. Monitoring systems should be simple and able to reveal early evidence of successful management; and

(f) Information flow and coordination between all stakeholders can be a time-consuming and difficult process. Lessons of experience from COREMAP's preparation call for a simplified institutional framework, where project implementors are selected by their individual qualifications, rather than agency/NGO affiliation.

TECHNICAL REVIEW

31. The proposed project was initially reviewed in July 1995. The external reviewers concluded that the project had very high priority for GEF due to Indonesia's strategic location at the center of the world's marine biodiversity, and the current reef degradation tends. The reviewers also pointed out that the proposed approach was the most effective strategy to achieve the project's goals, and praised GOI's strong commitment to the COREMAP program. The reviewers supported the following recommendations for project design: (i) a strong involvement of competent and trained NGOs in project implementation; (ii) a careful site selection and progressive phasing to ensure early impact and avoid areas where success is unlikely; (iii) attention to external threat enforcement and coordination with tourism development plans; (iv) a careful selection of project managers to ensure effective coordination with local communities and interest groups; (v) allocating exclusive user rights to local communities, and promoting user pay systems to ensure self-financing; (vi) close linkages between research and management needs; and (vii) close attention to land-based threats. These recommendations have been integrated into on-going project preparation.

32. In his March 1997 review, the STAP technical reviewer strongly supported the goal, objectives, strategy and procedures of the project proposal. He stressed, however: (i) that the number of project locations should be reduced in accordance with existing capacity; (ii) that the legal and enforcement framework should be clarified to ensure effective enforcement by the Navy and empowerment of local communities vis-à-vis external threats; (iii) close collaboration between researchers and managers; and (iv) guidelines to ensure that mariculture supported under the project will be limited and ecologically sustainable. The issue of project scope is also a concern among the project team and is being seriously discussed with GOI. Two options are currently envisaged: (i)

(d) ***Local Management Framework***. Coral reef management is a relatively new field, and there is no single formula that can apply to the diverse conditions of Indonesia. Guidelines governing project funding are currently being developed. A pending issue is the degree to which the project should subsidize local management and income generation activities, given the risk *that fishermen will revert to unsustainable fishing practices if rapid economic benefits do not materialize.* The local management framework will need to weigh the degree of subsidies against sustainability concerns. A second related issue is the extent to which alternative income generation (village development) will support sustainable reef management and conservation. The project will develop close links between these two activities by (i) making alternative income generation conditional upon progress on reef management plans; and (ii) encouraging activities directly linked to improved reef management, such as eco-tourism and increased fisheries productivity in areas adjacent to reef sanctuaries.

(e) ***Project Scope and Location Selection***. The number of project sites (outside GEF-funded areas) is likely to be excessive and require a reduction in scope (see para. 32). In addition, three project sites (Spermonde, Lease Islands, and Kupang Bay) need to be rationalized prior to appraisal to ensure that all locations are cost effective and can guarantee the sites' long-term viability.

(f) ***Conflicts with Marine Tourism***. Three project locations -- Gili Islands and Sekotong (in West Nusa Tenggara) and the Padaido Islands (a GEF-funded site) have in the past experienced conflicts between tourism operations and local communities unrelated to COREMAP, including land acquisition and resettlement. This issue is less of a problem in Padaido since the suspension of international flights to Biak. GOI has reiterated its commitment that coastal communities be the main beneficiaries of COREMAP, and provisions will be included in site funding guidelines to ensure that communities become direct beneficiaries of tourism development. The project will also be working with the private sector to encourage environmentally sustainable tourism.

CONCLUSION

34. COREMAP is a very important new initiative for GOI. Coral reef system management within a developing country context is a new field, and as such the project will be innovative and experimental. There are inherent risks associated with such an approach. At the same time, the project does not propose to save all of Indonesia's reefs, but to establish a system for their management in specific sites, which could become the basis for broader national interventions. There is good evidence in the Southeast Asia and Pacific region that such management systems are feasible. The rapid degradation of Indonesia's reefs and GOI's strong commitment to COREMAP provide the remaining reasons for supporting the project.

INDONESIA
CORAL REEF REHABILITATION AND MANAGEMENT PROJECT

Estimated Project Costs (US$ million)

Components/Activities	*Estimated Total Costs (US$ million)*	*GEF Contribution (US$ million)*
A. Community-Based Management (maximum 40 locations)	**17.0**	**4.0**
Facilitators/Field Managers	4.7	1.1
Socialization/Awareness/Training	3.8	0.9
Income Generation	3.0	0.7
Implementation of Management Plan/Siskamla	2.5	0.6
Reef-Saving Infrastructure	3.0	0.7
B. Enforcement/Policy	**9.0**	**3.0**
National COREMAP Strategy	1.0	0.3
National Coral Reef Protection Policy	2.5	1.3
Legal/Regulatory Support	1.5	0.4
Site Enforcement	4.0	1.0
C. Human Resources/Institutional Strengthening	**14.0**	**1.0**
TA (Technical Advisors)	7.0	--
Project Management/Guidelines Development/M&E	5.0	0.5
Training/Cross Visits/Comparative Studies	2.0	0.5
D. Information and Monitoring	**10.0**	**1.5**
Information Network/Database Development	6.5	--
Site Monitoring	1.8	0.4
Applied Research	1.0	0.4
Links with International Initiatives	0.7	0.7
E. Public Awareness	**10.0**	**2.5**
National and Regional Campaigns (including NGO contracts)	4.5	1.1
Awareness Materials Production/Dissemination	2.5	--
Public Awards	1.5	1.0
Workshops/Cross Visits for Decision Makers/Press	1.5	0.4
PDF Block B Grant		**0.28**
Grand Total (estimated)	**60.0**	**12.28**

Note: Costs are preliminary estimates requiring further discussion at pre-appraisal stage.

INDONESIA: CORAL REEF REHABILITATION AND MANAGEMENT PROJECT
SITES PROPOSED FOR GEF FINANCING

Characteristics	Taka Bone Rate	Wakatobi (Tukang Besi)	Padaido Islands	Spermonde Islands*
Region	***Flores Sea*** 21 islands, between South Sulawesi and Flores Island.	***Wallacea Region*** Small-island ecosystem between Flores and Banda Seas	***Northern Irian Jaya*** 41 islands, southeast of Biak Island.	***Makassar Straits*** 121 islands, west of South Sulawesi
Project Focus	Atoll area (Rajuni Kecil, Besar, Latondu, Tarupa, Jinato)	Selected villages in the four major islands.	Padaido Bawah and Padaido Atas	Under discussion to rationalize site boundaries to include: (a) a representative portion of outer reef; or (b) key locations and conservation areas in inner, middle and outer reef.
Size	National Park area: 530,800 ha	Reef area: 60,000 ha; National Park area: 1,390,000 ha	ca. 57,000 ha	to be discussed
Population	20,300	50,000	11,700	6,000 (in target locations)
GEF Justification	Identified as first order conservation priority under Indonesia *Marine Conservation Atlas*; identified as priority under *Global Representative System of Marine Protected Areas* Indonesia's largest atoll, world's third largest	Site is COREMAP's closest to the perceived center of world's coral reef diversity Identified as third order conservation priority under Indonesia *Marine Conservation Atlas.*	Extensive coral reefs or very high diversity; may contribute to Western Papua New Guinea reefs' maintenance.	Highest coral reef diversity recorded in Indonesia, one of the highest in the world. Identified as second order conservation priority under *Marine Conservation Atlas*.
Biological Diversity	Coral species: 200 Coral genera: 52 Reef habitats: atoll, patch, barrier, fringing Fish genera: 325 Gastropod sps: 121 Bivalve sps: 78 Dominant corals: *Acropora*	Site-specific coral reef species information not yet available, but nearby sites (e.g. Lucipara Islands in Banda Sea), indicate one of the highest biodiversity in the world Buterfly fish sps: 38 (compared to 42-46 in whole Irian Jaya) Reef habitats: fringing and atoll Reef condition: 70 percent of reefs with excellent (more than 75 % live) coral cover.	Coral species: 192 Reef habitats: atoll, fringing Fish species: 71-107 Sea grass sps: 6 Algae sps: 5-20 Dominant corals: *Acropora,* alternating with *Porites*	Coral species: 262; coral genera: 78 Reef habitats: fringing Fish species: 210 Sea grass sps: 11 Algae sps: 200 Dominant corals: *Acropora/Pocillopora* in outer reef, *Porites,* soft corals in inner reef
Current Status	National Marine Park since 1992	National Marine Park since 1996.	Proposed as Marine Recreation Park	Three small reserves proposed: P. Kapoposang (Marine Recreation Park) P. Panambungan (Strict Nature Reserve) Togo-Togo (Wildlife Reserve)
Main Threats	Bombing, cyanide fishing. Overexploitation from external fishers	Commercial bombing, cyanide, coral mining, overexploitation from external fishers.	Bombing and poison fishing (decreasing since 1994) Earthquake damage Potential for future impacts from tourism if international flights resume	Bombing, cyanide fishing, overfishing Sedimentation in inner reefs
Key Interventions (proposed)	- Implementation of marine park plan prepared by WWF/LP3M - Strengthened Navy patrols and community surveillance (siskamla). - Target awareness, income generation aimed to key external intruders (in Sinjai)	- Private sector-community partnership model, building upon Operation Wallacea and volunteer diver program. - Encourage self-financing through entrance fees, sponsorships and volunteer contributions into a park management fund. - Strengthen enforcement of destructive threats by	- Community-based management building on customary tenure; - Strengthened awareness campaigns to stop bombing, by involving informal leaders; - Continue BCN's program to involve local communities in eco-tourism opportunities.	- Strengthen Navy/provincial collaboration with local communities to stop illegal fishing. - Strengthen self-help groups for alternative income generation (mariculture, micro-enterprises). - Awareness program on impacts of destructive fishing (including 'bends' prevention program for local divers);

	- Awareness, income generation for local communities.	communities, Navy, and private sector.		- Link COREMAP with urban environmental project to control urban pollution in U. Pandang.
Cultural Features	Inhabited by Bajo-Buginese communities Individual systems being replaced by patron-client relationships	Inhabited by indigenous and Bajo communities, primarily subsistence fishers/farmers and traders.	Kinship groups (*keret*) Customary marine tenure and management systems (*sasisen*)	Buginese, Makassarese communities Patron-client relationships, traditional user rights systems around fish aggregation devices (*Ongko*)
Existing or Proposed Programs	- Park management plan awaiting implementation, with estimated (5 year) budget of US$750,000-1,000,000. - Local NGO (LP3M) program focuses on awareness, income generation. - Hasanuddin University program has on-going program to restock giant clams.	- Operation Wallacea, a partnership between Wallacea Development Institute (NGO), PHPA, LIPI, LH, and Hong Kong Bank Care for Nature Trust Fund, focuses on reef monitoring and management, with US$600,000 in sponsorship funds to date. Sponsorship expected to end in October 1997. Contributions for the next six years estimated at US$610,000. - Conservation International and Yayasan Sama have small collaboration program until 1997 to assist Bajo communities.	- Local NGO program (Yayasan Rumsram) focuses on biological monitoring and income generation. Assisted by a US$300,000 3-year grant from Biodiversity Conservation Network (1996-98). - Local collaboration program between army, police and district to stop bombing.	- Local NGO program focuses on awareness and community development in two villages. - Hasanuddin University conducts mariculture research program in the area. - Local Navy and province have collaborative program to stop illegal practices and provide alternative income. - Local diving company has proposed management partnership agreement for Kapoposang.

** GEF financing conditioned on site rationalization*

CALCULATION OF INCREMENTAL COSTS
INDONESIA: CORAL REEF REHABILITATION AND MANAGEMENT PROJECT

Context and Broad Development Goals:

1. Coral reefs and their associated marine life are one of the greatest natural treasures of Indonesia. The country is located at the center of the world's coral reef diversity. Indonesia's coral reefs are estimated at 50,000 to 100,000 km^2, or approximately 12 to 15 percent of the world's reefs[4]. The quality of Indonesian reefs is, however, declining rapidly and even remote reefs are not free from man-induced deterioration. It is currently estimated that less than 30 percent of Indonesia's reefs are in good condition (with live coral cover above 50 percent). The main threats in the present project's sites are destructive fishing practices (bombing and cyanide), coral mining, overfishing, settlement pollution, and uncontrolled tourism development.

2. Without immediate interventions, it is likely that large areas of reefs will suffer irreversible damage in the near future. These concerns have prompted the Government of Indonesia (GOI) to formulate the proposed Coral Reef Rehabilitation and Management Project with the objective of improving management in priority sites and rehabilitating degraded reefs through community based interventions, capacity building, awareness raising, monitoring and research.

3. The proposed project is consistent with Indonesia's Biodiversity Action Plan, Agenda 21, the Convention on Biological Diversity, GEF's Operational Program on Marine, Coastal, and Freshwater Ecosystems, and guidance from the three Conference of Parties. It specifically responds to the Jakarta Mandate stressing conservation and sustainable use of marine ecosystems. By focusing on Eastern Indonesia, the proposed project would help conserve an area which is believed to contain the richest coral reef, fish, and marine invertebrate biodiversity in the world.

Baseline Scenario

4. **Scope and Costs:** Under the baseline scenario, it is anticipated that GOI would begin implementation of its coral reef and rehabilitation program in the five provinces covered by the World Bank/GEF project. The baseline scenario would comprise five major elements:

(a) **On-site management** in approximately 12 sites and 40 locations in Eastern Indonesia, both inside and outside protected areas. Activities would include location management plan preparation and implementation, aided by trained facilitators and site managers; local awareness raising and community training; alternative income generation to reduce pressure on coastal resources and enhance sustainable use; strengthened links with enforcement networks; and 'reef-saving' infrastructure to relieve settlement impact on reefs. The average costs per location are estimated at US$300-500,000, including facilitator and site managers' costs. *The baseline costs for this component are estimated at US$13.0 million.*

(b) **Law Enforcement and Policy Coordination** at the national, regional and site levels. This component would include training, workshops, policy and legislation development, and monitoring, control and surveillance equipment for the project sites. *The baseline costs for this component are estimated at US$6.0 million.*

[4] M. Spalding, *personal communication*, based upon an upcoming study from the World Conservation Monitoring Center.

(c) **Institutional Strengthening and Human Resources Development**, at the national and regional level. This component is likely to be financed primarily by GOI (project management), and IBRD and AusAID (technical assistance). It would include strengthening local capacity through training and workshops, development of COREMAP program guidelines, technical assistance, and project management costs. *The baseline costs are estimated at US$13.0 million, including technical assistance costs*.

(d) **Monitoring and Research** would develop coral reef information network centers in existing facilities in Jakarta and Eastern Indonesia. The project would finance a strengthened coral reef information network, site monitoring, and applied research. *The baseline costs are estimated at US$8.5 million*.

(e) **Public Awareness,** at the national and regional level. This component would include mass-media campaigns, outreach programs and materials, dissemination of COREMAP guidelines and awareness building workshops, and a system of public awards. *Baseline costs in the amount of US$7.5 million are foreseen*.

5. **Benefits** Implementation of the Baseline Scenario investment program will be important for the rational use of Indonesian coral reef resources, both at the site level as well as for the country in general. A detailed economic analysis for the on-site management component is being prepared. It is estimated that, at the national level, sustainable hook-and-line live-grouper fishery (as opposed to cyanide fishing), could create jobs for an estimated 10,000 Indonesian fishers and generate net benefits on the order of US$321.8 million (in present value terms). Likewise, should blast fishing be prevented, gains of up to US$482,000 per km^2 in areas of high tourism value could be obtained. Should alternative income generation and enforcement of traditional property rights be successful in reducing fishing pressure from an 'open access' situation to an 'optimal sustainable yield', coral reef fisheries could produce an additional US $70,000 in net present value per km^2 of reef. The Baseline Scenario would also lead to greater institutional capacity, general public awareness, as well as strengthened monitoring and research capacity in Indonesia.

6. The Baseline Scenario would, however, be insufficient to ensure the effective conservation and management of sites of high biodiversity importance, since from both local communities as well as regional governments' perspectives, these areas are often isolated and of reduced regional development priority. The Baseline Scenario would focus on interventions having direct or indirect impact on livelihood opportunities for reef-dependent local communities. While these areas are under severe stress, they are often unrelated to areas of high biodiversity importance. Similarly, the GEF Baseline would not be sufficient to ensure that high priority *conservation* areas are included in future national COREMAP program strategies. The Baseline Scenario would also be insufficient to ensure (a) effective involvement and training of NGOs in field activities; (b) a public dissemination of lessons of experience, particularly amongst non-governmental stakeholders; and (e) effective links between COREMAP and global reef monitoring networks.

Global Environmental Objectives

7. The global environmental objective of the GEF alternative would be to ensure effective coral reef ecosystem conservation in sites of global biodiversity importance. The Indonesian reef ecosystem is believed to contain the richest coral reef, fish, and marine invertebrate biodiversity in the world. Given the links between coral reef sources and sinks, protection of Indonesian coral reefs would also assist coral reef regeneration in other parts of the Indo-Pacific region.

GEF Alternative

8. **Scope and Costs.** Under the GEF Alternative, an expanded program would be undertaken which would comprise activities focusing on both coastal poverty alleviation/ development through the rational use of reef resources (generating domestic benefits), as well as protection of coral reef ecosystems of global significance. The GEF alternative would supplement the components of the Baseline Scenario in the following ways:

(a) **<u>On-site management</u>** of up to four additional sites (see description in attached table):

A. The first site is the **Taka Bone Rate National Marine Park** in the Flores Sea, which has been identified as a first priority area for conservation under Indonesia's *Marine Conservation Atlas*, as well as a priority under the *Global Representative System of Marine Protected Areas* (Southeast Asia Region). Taka Bone Rate is the world's third largest atoll, and Indonesia's largest. The foreseen GOI expenditures of some US$1,000,000 during the project life are considered insufficient to effectively protect the park from external threats, and maintain core areas as sanctuaries. GEF incremental funding of approximately US$1 million is estimated to be required.

B. The second proposed site is the **Wakatobi (Tukang Besi) National Marine Park**, which is located in the Wallacea region (Southeast Sulawesi) and is COREMAP's closest site to the perceived center of global marine biodiversity. It was identified as a conservation priority under Indonesia's *Marine Conservation Atlas*, and declared a national park since 1996. Up to 70 percent of the reefs remain in excellent condition, but increasing threats -- especially from commercial bombing, cyanide, mining and overfishing -- make it a priority for urgent conservation. The site has been managed by a non-profit partnership group (Operation Wallacea) involving the private sector, NGOs and government agencies. This group has succeeded in raising international attention for the site, and is expected to raise US$600,000 over the next six years in sponsorships, paying diving volunteers, and entrance fees. This level of support is, however, insufficient to effectively manage and protect this remote archipelago, and GEF incremental funding of US$1.5 million is estimated to be required.

C. The third proposed site is the **Padaido Islands**, located southeast of Biak in northern Irian Jaya. This site has extensive and very diverse reefs, and is believed to contribute to coral reef maintenance in Western Papua New Guinea. It has suffered bombing and recent earthquake damage, but is reportedly recovering due to local initiatives to stop destructive fishing practices. The fourth proposed site is the **Spermonde Islands**, located in the eastern border of the Makassar Straits. This site has the highest coral reef diversity recorded in Indonesia (over 250 coral species) and one of the highest recorded in the world. GEF-financing of this site would be conditioned on rationalization of project locations and activities to adequately address sustainable use across the reef ecosystem. The level of support planned for the above sites during the project life (outlined in the attached table) is insufficient to ensure their effective management, and incremental GEF funding of US$1.5 million (approximately US$750,000 per site) is proposed.

D. Including the above four sites would add to the scope of what would otherwise be feasible under the project. For all four sites, GEF financing would make possible the deployment of field facilitators and site managers, training, awareness, preparation of management plans and conservation agreements, limited equipment, and alternative income generation activities encouraging rational uses of reef resources. Co-financing by beneficiaries would be asked to the extent that these activities are income generating. In cases where there would be uncertainty with respect to the potential success of new income generation interventions, the GEF cost ratio would be relaxed. *The estimated GEF contribution to cover incremental costs of the four sites is estimated at US$4.0 million, for a total GEF Alternative cost of US$17.0 million*.

b) **Enforcement and Policy**. Additional financing under this component would increase the assistance to GOI in preparing a national COREMAP program strategy with a stronger emphasis on conservation area protection, and in developing a national enforcement/policy strategy for coral reef management focusing particularly on mobile threats (poison and blast fishing). Additionally, relevant policy and legal support, especially in strengthening community user rights' systems, would be provided. The GEF alternative would also help efforts to implement a monitoring, control and surveillance system (MCS) for the GEF target sites. *It is currently estimated that GEF would provide incremental costs amounting to US$3.0 million, for a total GEF Alternative cost of US$9.0 million*.

(c) **Institutional Strengthening and Human Resources Development**. Additional items in the GEF Alternative for this component would include strengthening NGO capacity in coral reef management, additional training and comparative study tours to help disseminate lessons of experience, and incremental project management assistance necessary to support GEF activities. *GEF financing for this component would be quite limited, in the order of US$1.0 million, resulting in a total GEF Alternative cost of US$14.0 million*.

(d) **Monitoring and Research**. Additional items for inclusion in the GEF Alternative would include promoting links global coral reef monitoring networks (e.g. through linkage with ICLARM's Reef Base); and an objective evaluation of the project's impact on reefs, involving independent reviews. Targeted applied research that has a direct link to coral reef management -- such as research on sinks and sources of corals and spawning aggregation sites -- would provide missing information on how to set priorities for protection within GOI's coral reef strategy, and is also proposed for GEF financing. *GEF incremental financing for this component is estimated at US$ 1.5 million, for a total GEF Alternative cost of US$10.0 million*.

(e) **Public Awareness**. GEF funds are envisaged for enhanced national and regional-level coral reef campaigns, as well as increased involvement of local groups and NGOs; incremental support for a system of yearly awards and public recognition to outstanding COREMAP participants; and increased emphasis on decision makers' involvement and press coverage likely to benefit coral reef protection throughout Indonesia. *GEF incremental funding for this component is estimated at US$2.5 million, for a total GEF Alternative cost of US$10.0 million.*

Benefits

9. In addition to the national benefits associated with the Baseline Scenario, global benefits of the GEF Alternative include:

- Protection of globally significant biodiversity in priority coral reef ecosystems;
- Improved management of Take Bone Rate and Wakatobi Marine National Parks;
- Opportunity to test and expand community-based management both inside and outside protected areas;
- Improved national policy and enforcement strategy for coral reef management;
- Enhanced participation and public awareness amongst decision makers and the public at large;
- Enhanced capacity building for coral reef management, particularly amongst NGOs;
- Increased participation in global monitoring networks, and exchange of information on Indonesian coral reef conditions; and
- Increased understanding of linkages between sources and sinks of coral larvae recruitment.

Incremental Costs

10. The total costs of the Baseline Scenario are estimated at US$48.0 million. The GEF Alternative is estimated at US$60.0 million. The incremental costs of the GEF Alternative are therefore estimated at US$12.0 million. These costs will be adjusted at pre-appraisal stage and any changes reflected in the second submission to the GEF Council. AusAID has indicated their interest in supporting the COREMAP project, and is likely to finance elements of the Baseline Scenario. In addition, the Asian Development Bank and the Japanese International Development Agency (JICA) are involved in financing parallel projects within the COREMAP program that would amount to an additional financing of approximately US$50 to 60 million. These contributions are additional to the estimated Baseline Scenario for the current project. A GEF grant of US$12.0 million is therefore requested at this stage.

ANNEX 1

INCREMENTAL COST MATRIX

Component Sector	Cost Category	US$ Million	Domestic Benefit	Global Benefit
On-Site Management	Baseline	13.0	Revenues created from rational use of renewable reef resources; Increased knowledge of rational utilization of coral reef ecosystem;	
	With GEF Alternative	17.0	Improved management of two national marine parks (Taka Bone Rate and Wakatobi); Expansion and testing community based coral reef resource management inside and outside MPAs;	Protection of globally significant biodiversity; Pilot demonstrations, replicable elsewhere in Southeast Asia.
	Incremental	4.0		
Enforcement and Policy	Baseline	6.0	Establishment of national and provincial enforcement system and policy framework for coral reefs;	
	With GEF Alternative	9.0	Improved policy and enforcement strategy for coral reef management (e.g. poison fishing); Improved system of MCS; Relevant policy support, specially for communal property rights;	Improved national strategy and effective protection of the world's richest coral reefs; Contribution to international efforts to tackle poison fishing.
	Incremental	3.0		
Institutional Strengthening & Human Res. Dev.	Baseline	13.0	Increased public sector capacity to support community based coastal resource management;	
	With GEF Alternative	14.0	Enhanced capacity of policy makers through cross-site visits and increased training;	Improved management of globally significance sites; enhanced capacity of NGOs;
	Incremental	1.0		
Monitoring and Research	Baseline	8.5	Establishment of regional research centers and a monitoring system;	
	With GEF Alternative	10.0	Increased support for on-site mgt. and policy components through reef monitoring and targeted applied research; Mid-term project evaluation through independent review;	Improved knowledge of globally significant reef biodiversity and increased links to global monitoring networks; Increased understanding of interlinkages between sources and sinks of coral reef systems relevant to reef management;
	Incremental	1.5		
Public Awareness	Baseline	7.5	Raising public awareness of significance of coral reef ecosystems and their functions.	
	With GEF Alternative	10.0	Increased intensity of public awareness campaign; Increased involvement of local groups and NGOs in campaign;	Increased national and international public pressure to stop international mobile threats such as cyanide fishing; Increased exchange of regional lessons of experience on effective coral reef management. Strengthened public constituency to protect world's richest coral reefs.
	Incremental	2.5		
Totals	**Baseline**	**48.0**		
	With GEF Alternative	**60.0**		
	Incremental	**12.0**		