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IMPLEMENTATION COMPLETION REPORT
(TF-28370)

ON A

GRANT

IN THE AMOUNT OF US$ 4.57 MILLION

TO THE

GOVERNMENT OF THE DEMOCRATIC SOCIALIST REPUBLIC OF SRI LANKA

FOR THE

CONSERVATION AND SUSTAINABLE USE OF MEDICINAL PLANTS PROJECT

December 15, 2004

South Asia Environment and Social Development Sector
South Asia Region

CURRENCY EQUIVALENTS

(Exchange Rate Effective December 15, 2004)

Currency Unit = Sri Lankan Rupee
LKR = US$ 0.0095
US$ 1.00 = LKR105.24

Borrowers
FISCAL YEAR
January 1 December 31

ABBREVIATIONS AND ACRONYMS

ADCDC	-	Ayurvedic, Drugs, Cosmetics and Devices
BMARI	-	Bandaranaike Memorial Ayurvedic Research Institute
CAMCs	-	Conservation Area Management Committees
CBD	-	Convention on Biological Diversity
CDOs	-	Community Development Organisations
CONSMP	-	Conservation and Sustainable Use of Medicinal Plants Project
DOA	-	Department of Ayurveda
GEF	-	Global Environmental Facility
GND	-	Grama Niladari Division (an administrative border)
GOSL	-	Government of Sri Lanka
IDA	-	International Development Agency
IEC	-	Information and Education and Communications
IM	-	Indigenous Medicine
ISOA	-	Institutional Sector and Organisational Analysis
IUCN	-	World Conservation Union
MIM	-	Ministry of Indigenous Medicine
MPCA	-	Medicinal Plant Conservation Area
NITM	-	National Institute for Traditional Medicine
PMU	-	Project Management Unit
VPMCs	-	Village Project Management Committees

Vice President:	Praful C Patel
Country Director	Peter Harrold
Sector Manager	Jeffrey Racki
Task Team Leader/Task Manager:	Malcolm Jansen/Sumith Pilapitiya

SRI LANKA
CONSERVATION AND SUSTAINABLE USE OF MEDICINAL PLANTS PROJECT

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Project ID: P035828	*Project Name:* Conservation and Sustainable Use of Medicinal Plants Project
Team Leader: Malcolm A. B. Jansen	*TL Unit:* SASES
ICR Type: Core ICR	*Report Date: December 15, 2004*

1. Project Data

Name: Conservation and Sustainable Use of Medicinal Plants Project
L/C/TF Number: TF-28370
Country/Department: SRI LANKA
Region: South Asia Region

Sector/subsector: Agricultural extension and research (46%); Central government administration (25%); Forestry (17%); Other social services (7%); Law and justice (5%)
Theme: Biodiversity (P); Environmental policies and institutions (S); Participation and civic engagement (S)

KEY DATES			*Original*	*Revised/Actual*
PCD:	01/20/1995	*Effective:*	05/08/1998	05/08/1998
Appraisal:	09/01/1997	*MTR:*	10/15/2000	10/15/2000
Approval:	12/18/1997	*Closing:*	06/30/2003	06/30/2004

Borrower/Implementing Agency: Government of the Democratic Socialist Republic of Sri Lanka/Ministry of Indigenous Medicine
Other Partners: Department of Forestry, Department of Wildlife Conservation, Communities, Provincial Department of Ayurveda, Department of Ayurveda, BMARI

STAFF	Current	At Appraisal
Vice President:	Praful C. Patel	Mieko Nishimizu
Country Director:	Peter C. Harrold	Roberto Bentjerodt
Sector Manager:	Jeffrey Racki	Ridwan Ali & Michael Baxter
Team Leader at ICR:	Malcolm Jansen & Sumith Pilapitiya	Nadim Khouri & Malcolm Jansen
ICR Primary Author:	Robert Crown	

2. Principal Performance Ratings

(HS=Highly Satisfactory, S=Satisfactory, U=Unsatisfactory, HL=Highly Likely, L=Likely, UN=Unlikely, HUN=Highly Unlikely, HU=Highly Unsatisfactory, H=High, SU=Substantial, M=Modest, N=Negligible)

Outcome:	S
Sustainability:	L
Institutional Development Impact:	M
Bank Performance:	S
Borrower Performance:	U

	QAG (if available)	ICR
Quality at Entry:		S
Project at Risk at Any Time:	No	

3. Assessment of Development Objective and Design, and of Quality at Entry

3.1 Original Objective:

At the time of project identification, Sri Lanka was known to contain about 3,500 species of plants and 100 species of ferns of which about 1,500 have medicinal value. Of these medicinal plants, about 190 were found only in Sri Lanka. A well-developed traditional medical system (*ayurvedic* medicine) addressing up to 300 ailments had evolved, including as many as 15,000 practitioners (compared to about 11,000 Western trained practitioners), several hundred ayurvedic clinics, 38 dedicated hospitals and 2 professional training institutes. Dependency on ayurvedic medicine was particularly high among the rural and the poor populations.

Environmental assessments conducted in the early 1990s (National Environmental Action Plan, 1991; Updated, 1994) showed increased destruction of natural habitats through population expansion into arable lands, uncontrolled forestry exploitation, and other human-induced factors (waste disposal, pollution, urbanization) that placed medical plant species at risk (about 80 being considered "endangered") along with other flora and fauna. In addition, growth in demand for plant material was encouraging more aggressive harvesting using traditional methods as well as the growing importation of basic plant materials (meeting about 60% of demand at project identification). Combined, these trends were seen as endangering both the sustainability of the supply of indigenous-grown plant materials with known medicinal value, and increasing the reliance on imported plant materials. This appeared to represent both a risk to Sri Lanka's biodiversity and to the health status among the poor.

The Government of Sri Lanka (GOSL) began to update its strategy for biodiversity protection in the mid 1990s, with the assistance of the World Bank and other donors. Preparation of a Biodiversity Framework for Action (a biodiversity action plan) was identified as the first of 2 "phases" of the Global Environmental Facility (GEF) support to GOSL, through the World Bank; the second being an investment program that became the current project. GOSL also had at this time, ongoing interventions in forestry sector development; environmental, biodiversity and wildlife protection skills and awareness enhancement; promoting community participation in forest management; and embryonic skills enhancement in medicinal plant identification and nursery management. However, GOSL recognized that its resources would be limited. Therefore, in the implementation of the Framework for Action, it foresaw promoting community involvement and developing community initiatives in these activities, while playing a facilitator's role.

The international community had a strong interest in biodiversity protection that culminated in agreement on the Convention on Biological Diversity (CBD) in 1992. The Bank had also identified environmental and biodiversity protection as one of its concerns within its country assistance strategies. It had participated in the development of the environmental action plans and contributed to the financing of several GOSL initiatives in the sector including a Forest Sector Development Project that closed in December of 1996. The Bank was also focused on the causes and effects of poverty and poverty alleviation in Sri Lanka to which the promotion of income generating activities could contribute. It also supported health sector improvement interventions, although at the time it gave priority to promoting the "western model" of health care. GEF had also identified the need to protect medicinal plants as a special concern in Asia, where the potential loss of medically valuable genetic materials which might produce global benefits through

improved or new pharmaceuticals, developed from plants.

Responding to these factors, GOSL adopted the developmental objective of the project as to *conserve*[1] *globally and nationally significant medicinal plants, their habitats, species and genomes and promote their sustainable use*. While the specific attention was placed on conservation and sustainable use of medicinal plants found in the wild ("*in situ*"), it was assumed that complementary activities such as the production of medicinal plants "ex situ" as a substitute for harvesting from the wild, would provide a source of income for the individuals and communities, and provide further incentives to protect and use forest resources responsibly. The objective was also consistent with the goals of the GEF from which funding was solicited.

The project's goals were clear and operational. Indicators of project achievement: principally, the establishment of a viable community-based and participatory management system for bio-diverse areas with a known medicinal plants population, were relevant and readily monitorable. Indicators of medicinal plant conservation, although indirect namely, an increase in the number and volume of medicinal plants being cultivated outside of the forests (as a substitute for harvesting); and enhanced knowledge and capacity to manage medicinal plants sustainably in the wild, were also relevant and monitorable.

The scope of the project was considered to be within GOSL capacity (when augmented by appropriate advisory assistance). It would work in 5 locations and through a specially designated and temporary Project Management Unit (PMU), draw on the technical expertise of national agencies with established knowledge of ayurvedic medicine (Department of Ayurveda and its dependant institutes), agricultural extension, wildlife and forestry management, and international expertise in biodiversity through the World Conservation Union (IUCN). However, actually achieving the objectives would be complex and require finding a delicate combination of incentives and sanctions to affect a behavior change on the part of traditional forest users (villagers for farming and gathering, loggers). It would also require establishing more attractive income earning alternatives to traditional forest exploitation to reduce pressures on plants found in the wild. Also, in order that project benefits reach villagers and holders of traditional knowledge, the GOSL would have to resolve legal and political issues related to intellectual property rights over traditional knowledge, and enforce them. This had never been fully accomplished in less developed countries.

The project team was aware of these complexities and inherent risks in achieving project objectives. They were also conscious of the controversial aspects of attempting to restrict and regulate access to traditional knowledge and indigenous plant materials and develop an intellectual property rights regime and made provision in project preparation and design to attempt to mitigate the risks. The Team and GOSL were particularly attentive to conducting stakeholder consultations among agencies and stakeholders, and to reach out to beneficiaries at the village level during this process. Moreover, the team recognized the essential "piloting" of several project interventions, and that follow-on investments would probably be required to have a longer-lasting impact on the underlying supply-demand balances for medicinal plants, and on attitudes and behavior towards using natural resources. Had the instrument been available, the project might have been a candidate for a "Learning and Innovation Loan".

The project's formally-stated objectives remained valid throughout project implementation although the geographic scope of the project was reduced to 4 sites from 5 during implementation when intractable differences with a national partner agency on project goals and implementation procedures arose in this agency's area of operation. More importantly, however, it became clear that villagers were less concerned for conserving medicinal plants *per se* than raising incomes and addressing community needs, even though it was understood that conservation and sustainable use of the forests could contribute to these broader goals. After the Mid Term Review, therefore, the PMU re-focused its approach and adopted a participatory village/community development model as a framework in which promoting the sustainable use of plants from the wild played a part. This change of focus was an appropriate response and eventually enriched the development impact of the project, was well documented and discussed, and did not require a formal legal amendment.

3.2 Revised Objective:

The project objectives were not revised during implementation. Recognizing the validity of the project's objectives, the Bank agreed to extend project closing by one year (from June 30, 2003, to June 30, 2004) to allow further time to complete field activities that were slowed due to the security situation in the Bibile Medicinal Plant Conservation Area (MPCA) (that was near an unstable border area) and the severe drought that prevailed in the project areas.

3.3 Original Components:

The project planned to reach its goals by mobilizing the collaboration of local populations in villages in or near areas known for active collection of medicinal plants from the wild. These areas, called Medical Plant Conservation Areas were to be associated with other conservation zones (such as forestry conservation areas, strict nature reserves, sanctuaries, and other forest categories that contain significant medicinal plant populations). Each MPCA would be structured through Village Project Management Committees (VPMCs; one per village comprising upto 12 persons) that would be amalgamated into a Conservation Area Management Committee (CAMC). Through this structure, villagers would be encouraged to, modify their traditional harvesting and use practices, adopt the cultivation of medical plants as a substitute for harvesting from the wild and offered opportunities to develop new sources of income from value added enterprises. They would be offered technical assistance, organizational support and other services aimed at facilitating such changes. GOSL would provide upstream organizational structures intended to sustain villagers' interests. The project actions for operationalizing this implementation strategy were grouped in four components:

i) Expansion of conservation and sustainable use of medicinal plants ***in situ***, in the newly designated Medicinal Plant Conservation Areas (MPCAs), through activities covering socio-economic and ethnobotanical data collection to establish baseline information and inventories; growth and yield studies (sustainability studies) of various species; education in and extension of ayurvedic medicine practices; development and application of conservation strategies; and the development of action plans for harvesting, processing, and producing medicinal plants in a sustainable manner at the village level (Village Action Plans);

ii) Expansion of ***ex situ*** cultivation and conservation of medicinal plant materials and genotypes through the establishment and improvement of national nurseries, conduct of propagation research and field plantation techniques for further extension to end users; and development of extension and dissemination channels;

iii) Provision of information services and institutional support focused on the development and promotion of an adequate legal and regulatory framework covering access to and management of indigenous medicinal plant knowledge and related information (intellectual property rights); the compilation and preservation of knowledge about medicinal plants and a network for managing this information; training and awareness building; monitoring and evaluation; and

iv) Creation of a Project Management Unit to manage these activities and to provide coordination and technical support of the required services.

This operational strategy and the component design adopted several best international practices of the day in natural resource, forestry, and biodiversity conservation work. The components also aimed to use information, knowledge and incentives (economic, social) to modify behavior rather than using enforcement and sanctions which was also a recognized lesson from experience. The design also addressed key constraints and mitigate risks (protecting intellectual property rights to encourage participation and information sharing; generating new technological base for producing medicinal plant cultivators; and eventually, after the Mid Term Review providing "seed capital" to co-finance new ventures with villagers). Various agencies of the GOSL were known to have expertise and experience in such actions as research management, information collection and management, agronomic extension, so that capacity appeared to be available to implement the components.

The effectiveness of these project components was, however, predicated on two assumptions identified in the project appraisal document, and a third which was implied . First it was assumed that attractive and competitive income sources could be generated as alternatives to simple traditional harvesting of plant material, and that villagers would abandon (or at least adopt "sustainable" harvesting of) plants in the wild once these were available. Second, it was assumed that the active participation of other agencies, with ongoing programs of their own, could be mobilized through coordination committees and negotiations of memoranda of understanding in a timely and managed manner. Finally, it was implicitly assumed that mass awareness campaigns would provide sufficient "actionable intelligence" for target populations (villagers, ayurvedic practitioners) to understand the issues and project goals, and respond by modifying their activities.

These assumptions did not entirely hold true. The project did contract for agronomic research and provide resources to finance studies of alternative income sources, that might eventually lead to propagation and farm production of medicinal plant material, and staff for social "mobilization" as well as school information packets to share information when it would be available. However, domesticating wild plants for on-farm production is a long and unpredictable process and this built into the project, the additional risks of obtaining and disseminating research results and having them adopted in a timely manner. The project design might have been improved, if a specific

component/sub-component had been included (independently prepared, financed and managed against specific outcomes) related to income generation. Even if this might have been beyond the allowable limits of GEF financing, alternatives could have been sought.

The initial project components remained valid throughout the project, although their content was modified in response to implementation experience. As mentioned, the geographic scope of the project was reduced to 4 medical plant conservation areas when the Non-Governmental Organisation contracted to implement the project in its pre-existing project area, failed to follow project norms and standards. Most importantly, when it became evident that incentives and alternative income sources based solely on medicinal plant-related activities did not have sufficient interest for most villagers, project mangers introduced the concept of village micro planning that covered a broader set of income and village development objectives that the original "village action plans", focused exclusively on medicinal plant conservation. This introduced the concept of "community based development" and self-help approach that included but did not focus exclusively on medicinal plant and biodiversity concerns. The project also introduced the provision of "seed funds" to help establish village revolving funds (micro credit funds) in support of this broader approach.

3.4 Revised Components:

The project components were not revised during implementation.

3.5 Quality at Entry:

The quality of entry of the project, was considered satisfactory at the time. However, in retrospect, there were shortcomings that could have been avoided with knowledge available at the time.

While the project's goals were consistent with international agencies, GEF and Bank priorities, evidence of GOSL ownership of the project was based mainly on its commitment to and signature of the CBD. GOSL also indicated early commitment to addressing difficult political issues related to intellectual property rights for which the project offered a compelling example, but did not complete legislative and regulatory actions to make this a reality. Moreover, the degree of ownership within the bodies expected to implement the project was not vigorously probed. Granted, the Ministry of Indigenous Medicine had been pursuing a program of extending ayurvedic practices (hospital and clinic development, medicinal plant processing and distribution, practitioner training) that could have had to be based increasingly on imported plant materials given the deterioration of domestic supplies, but this was not a fully stated concern of that ministry. The Ministry of Environment was beginning a process of re-organization and institutional development, through an Environmental Management Project[2] (also supported with International Development Agency (IDA) financing), among others, that would eventually position it to preserve biodiversity richness including plants with medicinal value, more effectively, however, it was not ready to assume this responsibility at the time.

This said, preparation was undertaken under a GOSL Steering Committee which drew together the major stakeholders in the project. It was supported by representation from the World Bank

Mission in Colombo, and strong technical support from the GEF partner agency, IUCN. Preparation work included the development of a National Biodiversity Framework for Action conducted through participatory and consultative methods involving a broad set of stakeholders. The project, as designed, met the standards of the GEF Scientific and Technical Advisory Panel which endorsed its goals and potential benefic value of its activities for the rural and poor populations.

During preparation, GOSL adequately observed the Bank's safeguard policies covering environmental assessment and social assessment (including identification of special needs[3] of an indigenous population group, the *Veddhas)*. An institutional assessment was conducted, concentrated on the capacity of the Ministry of Indigenous Medicine (MIM) and the Ministry of Environment, which identified some potential administrative weaknesses. These were to be compensated through the recruitment of technical assistance[4]. The project did not conduct financial management or procurement assessments following current standards, however, appears to have made provisions for meeting Bank standards through the recruitment of PMU staff and the training of the Accountant in Bank procedures prior to grant effectiveness.

The selection of objectives, components and approach to implementation through community participation would be considered sound and logical by current standards. However, the project was not fully "ready for implementation", following today's norms. Three basic assumptions should have been tested more vigorously prior to launching the project. First, an analysis should have been conducted on a minimum number of alternative income earning activities to fully appreciate the feasibility of making such promises to villagers (and as mentioned, prepared for as a separate component/sub-component if required). Second, the assumption that it was sufficient to raise general awareness of the value of medicinal plants and provide information to motivate village action was questionable, and attention should have been paid to developing ex ante, a coherent communications strategy prior to project approval, with training given to field staff on the methodology and messages to properly represent the project prior to grant effectiveness. Such a strategy was prepared early in the project, but not adequately implemented. Finally, the support of other agencies deemed necessary for project success (to the extent that actual operational support was being sought, rather than simply "coordination" with the objective of maintaining information flows only) should have been more thoroughly verified ex ante.

Progressively, through implementation, these gaps were filled, however, at a cost of time and participation in the project.

[1/] The Initial Executive Project Summary for the project (February 14 1995) in fact stated the objective as "to ***establish an integrated mechanism*** for the conservation and sustainable use of medicinal plants". Establishing this system became in fact the prime focus of most of the project's activities and the core standard for measuring its effectiveness.

[2/] Environmental Action 1 Project: approved March 27, 1997, US$14.8Mn IDA financing, Project ID-P010513.

[3/] A separate Indigenous Peoples Development Plan was not required at that time, however, the basic project methodology that used village medicinal plant committees and action plans would have met this standard.

[4/] The project relied very extensively on the IUCN for operational and technical support, and obtaining the IUCN contract was a condition of grant effectiveness.

4. Achievement of Objective and Outputs

4.1 Outcome/achievement of objective:

The project has had a satisfactory outcome in achieving most of its original objectives, which remain today are relevant to and hold the potential of contributing more to both GOSL and GEF (and World Bank) objectives of improving environmental protection and reducing poverty.

The project has succeeded in increasing awareness of the potential for conserving and using medicinal plants more sustainably, both in the wild and through cultivation and provided knowledge and tools for expanding efforts in these directions. Moreover, it succeeded in establishing medicinal plants as a special area of interest with the potential for offering concrete immediate benefits for stakeholders within the broader concern for forestry and biodiversity conservation. It has also re-affirmed a view that the conservation and sustainable use of medicinal plants will be more strongly influenced by factors affecting the conservation and sustainable use of forestry resources in general than by specific efforts targeted on medicinal plants themselves.

Most significantly, the project presented a successful model for organizing and empowering villagers to assume responsibility for the well-being of their natural resource base through participatory Village Project Management Committees and the "micro plans" they developed to generate economic and social benefits for their communities. At project completion, 39 VPMCs were established (within 4 CAMCs) in which a majority of village residents were affiliated directly, which brought forward a gender-integrated leadership corps, which held and managed funds used for micro credit for self help, and which had established social and environmental accountability as part of their culture. This has provided a valuable platform for further community development and environmental protection work.

However, as will be discussed later, further consolidation of this experience would be necessary to derive the maximum benefit from what has been developed so far and reduce the risks of extending this experience to other ecosystems. GOSL is envisaging a post-project program to address these issues.

4.2 Outputs by components:

The project produced most of its expected outputs satisfactorily.

Component 1: *In situ* conservation of medicinal plants (US$2.07 million)

This component completed several mutually supporting activities focused on raising the prevalence of rational and sustainable medicinal plant use at the village level, and achieved the following:

a) Four Medicinal Plant Conservation Areas were established as extensions of other conservation areas, with the participation of villages found in the geographic area. The original plan was to include between 10,000-12,000 ha within the new MPCAs, as buffer zones adjacent existing forest reserves and planned protected areas. In practice however, villagers came to identify the forest reserves and protected areas, as well as the areas included in village domains

(Grama Niladariya Divisions (GND)) as being within the project's scope of activity. The scale of these areas which became the focus of "protection" expanded to about 74,000 ha[1]. This created secondary benefits for the forest reserves and can be considered as having positively influenced the attitudes of the Forest Department with respect to the concept of community forestry. The MPCAs were delineated and mapped, and villages were surveyed with the participation of the professionals, and villagers themselves. A fifth MPCA was launched through social mobilization and plant inventory work, but was not subsequently developed.

b) Baseline socioeconomic and ethnobotanical information has been collected for each of the 4 organized MPCAs, and transferred into field manuals, useful for plant identification, plant uses, distribution, among other items needed to formulate sustainable use plans. A data base containing information on location, quantities threats and remedial actions covering about 1,400 species was produced from these surveys. In addition, a selected compendium of information for the most significant 200 medicinal plants is being finalized (see Component 3). This information has become the most detailed ecological accounting of medicinal plants in Sri Lanka.

c) All villages (39) in the four MPCAs developed micro plans for both sustaining the availability and use of medicinal plants in their boundaries and for continuing to support income generating activities (see *ex situ* activities below). These were first conceived as Village Action Plans, covering principally, an agenda related to zoning, forest protection, medicinal plant cultivation, transformation and processing of medicinal plants. In the effort to promote conservation and sustainable use, several activities were particularly successful: including enrichment planting (up to 40 species were mentioned in surveys of different MPCAs, about half of which were endangered medicinal species with survival rates of up to 80%); fuel-wood planting; stream bank protection (between 10-30 km depending on the MPCA); and the establishment of fire protection lines. Following the Mid Term Review project staff adopted a modified approach in which villagers became more involved in a participatory planning process provided information from resource surveys; and guided in a "problem identification problem solving" methodology to assure village ownership, implementability and accountability in a set of self-help activities. Financial support was provided from the project to support the Plans and complement village generated funds. Most of the plans were revised at least once in the final two years of the project to adjust to achievements and changing conditions[2]. It is also important to note that a specific VPMC was organized covering a small but significant indigenous population, the *Veddhas.*

d) CAMCs were expected to produce conservation strategies for the MPCAs and to a certain degree these were produced. It was intended that these strategies aggregate and synthesize the content of the VPMCs' micro plans and this was the case. However, it was also expected that plans at this level would add additional activities that would be executed for the common benefit and inturn support the micro plans (where economies of scale could be realized, as in marketing, medicinal plant processing facilities, training, and the provision of technical assistance to villagers in their own planning and mobilization efforts). The strategies were also expected to include other GOSL programs that might support village development. Most MPCA plans were deficient in this latter regard[3].

e) *The project produced assessments of the sustainable harvesting levels* of 6 most commonly used medicinal plants, based on professionally conducted growth and yield studies. This activity began late in the project period, and was modest in scope. However, arrangements have been made with the Sri Jayawardenapura University to continue the research that should include the identification of a methodology for including villagers in the process of identifying plants and monitoring yields.

f) *Extension and education support was successfully provided* in each of the MPCAs through the respective CAMCs, on a limited and uneven basis. Of particular significance was the development of a model for apprenticeships of interested villagers with recognized master practitioners of traditional medicine (the "guru-kula" system). The model permitted validation of the status of the "guru", and allowed villagers to access his/her knowledge while serving in their own communities, under supervision. GOSL intends to replicate this model.

Component 2: Expansion of Ex situ Cultivation and Conservation (US$0.48 million)

The project assisted the Department of Ayurveda (of MIM) to establish 2 new and rehabilitate 3 existing nurseries for the collection and conservation of germplasm and plant materials, which succeeded in collecting and protecting about 1,800 species. It also included developing propagation techniques for about 27 of the most frequently used species as a basis for further extension to farmers. Research was also concluded and tested in farmer's fields of planting and cultivation techniques as a basis for further extension to about 1,750 adopting farmers.

Component 3: Information and Institutional Support (US$2.52 million)

The project included support for five sets of activities intended to construct a framework for longer term sustainability of medicinal plant conservation with the following results:

a) *Legal protection of intellectual property rights associated with medicinal plants* was to be established through the development and enactment of guidelines and regulations governing access to and the use of ethnobotanical and historic information compiled and transcribed through the project. The MIM established an Advisory Group on Intellectual Property rights prior to project approval to lead this effort and advise the project PMU on appropriate steps to establish these protections. The PMU facilitated the drafting of legislation that would have established the rights and guidelines for managing and enforcing these rights which was available by the time of the Mid Term Review of the project. The draft has since been submitted for cabinet review where decisions were made to transfer responsibility for the legislation out of the MIM and assign it to other ministries (first the Ministry of Commerce and subsequently the Ministry of Trade) who have other existing interests in intellectual property. At present, therefore, no definitive action has been taken to protect, regulate or manage the access to project generated information[4].

b) *Bandaranaike Memorial Ayurvedic Research Institute (BMARI) has completed technical design of the national medicinal plant data base* built on ethnobotanical surveys and information compiled from other studies and sources. This includes the acquisition and translation of traditional texts on *ola* leaf documents. While a protocol for accessing this information has been prepared and is under the ratification process, a computer-based data base is not operational.

c) *BMARI has also produced teacher manuals* that have allowed 80 schools and up to 27,000 students to obtain basic understanding of ayurvedic practice and medicinal plants, as well as mass awareness materials.

d) *Monitoring and evaluating the results (impacts)* of project activity was designed during project implementation after about 18 months of project implementation. Consultants concluded 4 rounds of evaluation of 'attitude and perception' surveys, which provided feedback to the PMU that permitted it to track results relative to a base line. However, these evaluations were not adequately designed to provide ongoing feedback that could be directly integrated back into evolving VPMC and CAMC decision-making and development plans. To address this issue, the PMU introduced a "participatory monitoring and evaluation approach" to accompany the more dynamic "micro-planning" methodology adopted earlier. VPMCs in all MPCAs continue to receive training and support in applying this participatory system. The project continued to employ surveys and personal rapportage as its main instrument for monitoring and evaluating progress. While appropriate when the principal interest is seen through the social science perspective, it was not, adequate to provide monitoring and evaluation of physical phenomena from a physical science perspective. This would have required an experimental design.

e) *The PMU* succeeded in establishing annual work plans, managing project resources and supervising implementation. However, the PMU did not have the flexibility to modify its staffing and was not therefore empowered to engage a communications expert which might have directed this activity more effectively.

4.3 Net Present Value/Economic rate of return:

Not estimated

4.4 Financial rate of return:

Not estimated

4.5 Institutional development impact:

The project did not have an explicit institutional development component although capacity building was intended in much of the project's activities[5] and was successful in developing sustainable institutional arrangements. Within communities, VPMCs and their apex CAMCs have been established and appear to be sustainable. These organizations have been trained and given legal powers to assume responsibilities for managing micro credit, husbanding community natural resources and providing support for private income generating initiatives, using community finances. The project has also provided new capacity for MIM and the Department of Ayurveda (DOA) to perform their functions effectively, within current budget limits. The project PMU has been absorbed into a new planning and policy unit within the MIM and is beginning to develop policies and programs for the strengthening of GOSL support for traditional medicine. Agencies of the DOA (for example, BMARI) have also been strengthened in their ability to manage information, support research and educate practitioners and the general public. MIM is also now in a position to provide consistent support for community groups (VPMCs). In a broader sense,

with the experience of the project, GOSL has been able to establish the concept of a "system" for supporting traditional medicine. This establishes a basis for further program development and financing. Lastly, the Forestry Department of the Ministry of Environment has been able to adopt the model of the VPMCs for its program of community forestry, which is considered to be a cost effective methodology for forest and biodiversity protection.

[1/] Kanneliya: 5,700 ha that included the Kanneliya forest reserve managed by the Forest Department and 8 administrative districts (GNDs); Bible: 37,000 ha that included the Niligala reserve, a wildlife reserve, 7 GNDs and 2 GNDs largely inhabited by indigenous peoples; Naula: 16,300 ha that included the Kumaragala reserve, an additional proposed reserve, and 11 GNDs; Rajawake: 14,400 ha including the Rajawak Forest, a further reserve and 10 GNDs.

[2/] Kapila Fernando (June 2004), *Lessons from the Introduction and Implementation of Micro Plans,* IUCN

[3/] ibid.

[4/] Ranjith Mahindapala (June 2004), *Case Study on Legislation for Safeguarding Traditional Knowledge Related to the Use of Medicinal Plants,* IUCN

[5/] The initial project concept notes for the Technical Review Panel, February 14, 1995 did state that the objective of the investment project was to "establish an integrated mechanism for the conservation and sustainable use of medicinal plants"

5. Major Factors Affecting Implementation and Outcome

5.1 Factors outside the control of government or implementing agency:

The project was identified at a time of high international interest in biodiversity conservation, supported by well informed and well resourced international advocacy organizations. This tended to define the issues and agenda for actions that were not totally in phase with the institutional capacity, but which were difficult for GOSL to alter substantially. In addition, the project was also undertaken during a period of considerable national political instability, with five elections called during the six year implementation period. In the vacuum that was periodically created while ministries and key personnel changed, international partners took a disproportionate amount of daily leadership, to the detriment of GOSL's continued ownership of the project.

The high degree of international advocacy of biodiversity conservation in the "global interest" also fueled national public debate over the prospects of the loss of national control over indigenous knowledge and bio-resources. The impact of this was to further reduce the perception of national ownership and national interest in the project and complicated the task of building local and village partnerships.

5.2 Factors generally subject to government control:

Granted that the political climate may have limited the GOSL's options, it still did not take steps to protect the project from destabilizing changes in ministerial affiliation of the Department of Ayurveda, or the leadership of the PMU. During the period, the project was affiliated with five ministries and ministers, 5 Secretaries, 4 Commissioners of Ayurveda and 4 PMU Directors. Each change required re-introducing the project, implementation delays, and uncertainties over goals and objectives.

5.3 Factors generally subject to implementing agency control:

Project implementation authorities (the PMU with the ongoing contribution of IUCN) made extensive technical preparations of the project, including an extensive information and sensitization campaign with stakeholders in ayurvedic medicine. This worked to counteract to some degree the criticism of the project as not being fully in the national interest. However, the agencies did not extend their process to develop an adequate communications program for reaching regional and local beneficiary groups; reducing the clarity of the project's key messages, processes for dissemination and obtaining feedback, and evaluation of project effectiveness. Field staff did not receive explicit training in how to conduct the communications and engagement process and were, therefore, left largely to improvise. As a result, in many cases, villagers continued to interpret "conservation" in the use of forestry resources as "prohibition" against their use, and project activities as a blueprint to be followed, not guidance. These ambiguities were corrected only at the Mid Term Review. It also led to a slow process in reaching common understanding with agencies such as the Forestry Department on the basic project concept of "sustainable use" of resources.

5.4 Costs and financing:

At completion, project costs were within the original estimates for components and categories of expense. The GEF grant was fully disbursed and accounted for.

6. Sustainability

6.1 Rationale for sustainability rating:

Taken as a whole, and in spite of issues of ambivalence regarding the project's ownership during implementation, the achievements of the project are likely to be sustained. However, this will occur because several agencies are expected to absorb and maintain various practices and physical products of the project that are consistent with their own mandates, rather than having a single institution continue implementing project activities in their entirety. Moreover, sustaining several of the project's achievements will involve new risks.

1. MPCA Establishment and Conservation Strategy: The project established the boundaries of these areas with the agreement of the villagers and developed operational practices for assuring sustainable use of the natural habitat. In the development of these practices, a core of forestry officers ("beat" forest officers) began to engage villagers as partners in implementing conservation practices (fire breaks, stream bank protection, non-destructive use of plants and trees, abandonment of destructive practices such as culling bean poles, replacement planting), rather than as intruders. This provided concrete examples for them to appreciate and support community forestry policy in the Forestry Department and Ministry of Environment and counteracted negative experiences with earlier attempts to implement the policy. Officials have now begun to re-apply the practices in other projects. In addition, while MPCAs were identified in the context of medicinal plants conservation, their relevance to the broader issue of biodiversity conservation has been recognized and their continued management is consistent with the mandates of the Forestry Department and Ministry of Environment. As a result, the MPCA concept and the participation of communities is likely to survive in practice.

2. CAMCs and VPMCs: While these organizations were initiated with the purpose of promoting the sustainable use of forest resources with a focus on medicinal plant production and harvesting, they have evolved into community development organizations. Their functions have expanded to include the management of small credit operations for their members, production and processing, marketing of medicinal plants, and they are being given legal status as non-profit organizations. Business plans for the CAMCs show that they can be, under reasonably conservative assumptions, self sustaining financially. Leadership of the new CAMCs has received training in business management and shows considerable entrepreneurship and commitment. In addition, a vehicle has been established to provide a forum for information sharing, organizing further refresher training, implementing joint operations that would benefit from scale. As a result, subject to the usual risks of failure that face small businesses, the CAMC/VPMC structure should be sustainable as an expression of community self help. Unfortunately, this development also creates the risk that in the effort to develop VPMCs/CAMCs economically and socially, the attention to conservation and sustainable use of natural resources would be eclipsed by priorities considered to be more pressing. Managing this risk will require that supporting authorities (such as MIM through its new strategy unit: see Transition Arrangements below) continue to emphasize the need to correctly align attention to the sustained use of natural resources with the survival and development of traditional medicine.

3. Research on harvest sustainability, plant propagation, field production guidelines, and dissemination of results: The project initiated research in a number of areas that support the further interests of ayurvedic medicine, which would also have beneficial effects for forest conservation and sustainable use. Most of this work was implemented through contracts with centers of excellence and/or other sources of expertise. These activities fall within the organizational mandate of the BMARI which has taken steps to assume responsibility for continuing the supervision of these actions. Subject to the availability of government budget and other support, financing these activities should be sustainable. The MIM/DOA is formulating a program for the integration of the activities into mainstream work programs.

4. Nurseries and plant collections: Subject to annual budget allocations for the DOA/BMARI, the BMARI is expected to continue to maintain these collections as part of its research agenda.

5. Databases, information network, awareness and education: BMARI has been responsible for preparing and maintaining databases built on social surveys and ethnobotanical surveys conducted in the MPCAs. It has developed the expertise in managing the Information Technology aspects of the databases, and appears prepared to continue operating the systems.

6. National Policy: The Ministry of Indigenous Medicine has completed a new *"National Policy on Sri Lanka Systems of Indigenous Medicine*" and a proposed action plan to continue the initiatives of the project under their management. This reflects a significant step in raising the level of attention that GOSL is preparing to give to the sector and is complementing the other mainstream contributors to national health and poverty reduction efforts (see Transition Arrangements below).

Most importantly, however, the project developed a sense of empowerment and self help in the villages that fell within the VPMCs and CAMCs. New sources of leadership have emerged, with a strong representation of women in key positions, that is younger and more forward looking than traditional leadership. Among these newly empowered peoples has been a key indigenous population, the *Vedda* people, who formed their own VPMC and participated fully in the project. As has been experienced in other countries, the introduction of a locally managed and accountable credit system was a major factor creating this power. People have also experienced exercising institutionalized and collective control and discipline in the use of forest resources over other village members and outsiders. Collectively therefore, this has represented a movement and in a sense, a change in village culture, all be it on a small scale. It is highly likely that this culture shift will be sustained and spread.

6.2 Transition arrangement to regular operations:

The Ministry of Environment which oversees the Forestry Department is implementing community forestry following the model developed in the project and is preparing additional applications.

In addition to incorporating selected project activities into the regular work programs of the BMARI, the Ministry of Indigenous Medicine has decided to create an additional unit to coordinate and further develop its strategic role of stewardship and support for the practice of ayurvedic medicine. At present the MIM is largely an administrative organ that has not followed a sectoral and goal driven approach to the practice. The formulation of a national policy and action plan (see Sustainability, above) and the formation of a highly placed unit to develop and implement it in an operational manner would correct this shortcoming. By adopting a strategic approach to developing the traditional medicine sector, MIM would then position itself to formulate a development and investment program that could attract international support. Options that might be considered in such a plan are outlined in Annex 9.

7. Bank and Borrower Performance

Bank

7.1 Lending:

Bank staff performance through the lending cycle appears to have been generally satisfactory although compromised in two respects.

The project was identified during the mid 1990s which was a period of high international interest in biodiversity protection and conservation. During this period, the first international Convention on Biological Diversity was being finalized and GOSL was a signatory. Interest in species conservation and protection was also a focus of GEF, into which category medicinal plants were of special concern in south Asian countries. The value of Sri Lanka's biodiversity was considered to be of global value. However, the Bank appreciated that GOSL required further strategic thinking about biodiversity conservation prior to undertaking an investment project, and identified the project as the second of two activities; the first being the development of a broad based biodiversity action plan, which was completed in the early years of the project. The government

agency charged with environmental protection, the Central Environmental Authority was only beginning to develop new relationships with an embryonic Environment Ministry and a separate IDA project to support a broad environmental action agenda was just being identified and prepared and was not in a position to undertake a field-based project (this was evident when GOSL itself reduced the scope of the Environment Action 1 Project to cover mainly institutional development). Moreover, while some institutions related to ayurvedic medicine had ongoing activities related to plant identification, propagation and production, and anecdotal evidence suggested that the domestically available stock of medicinal plants was shrinking, the sustainable availability of plant material *per se* does not appear to have been appreciated by authorities as the principle threat to the practice of ayurvedic medicine. None-the-less, the Bank saw the global value of a biodiversity project with medicinal plants as its focus and pursued this. In so doing, granted that there were potential benefits, the Bank may have taken excessive level of ownership of a project.

Project technical preparation was completed satisfactorily, with adequate attention to stakeholder inclusion at the national level, largely through the efforts of IUCN. However, the preparation did not take full account of the processes that would be required to build local ownership and community participation in establishing medicinal plant conservation areas (the key element of project implementation design) and did not prepare adequate operations manuals and training of field staff on the approaches and messages that would facilitate the building process. In fact, this activity was delayed for about 1 year following effectiveness. This led to confusion among project field staff and village participants on the goals of the project, the roles and responsibilities of local associations and village expectations, that was corrected only following the Mid Term Review. The appraisal process also satisfactorily evaluated technical matters, identifying risks and proposing mitigation steps and completing requisite technical analyses, appropriate to a biodiversity protection project. However, while GOSL undertook steps to establish an "ownership framework" (establishing a project Steering Committee, a PMU in the Ministry of Indigenous Medicine) and the appraisal identified the needs for strong technical assistance inputs and links to external technical institutions as a requisite risk mitigation measure, the Bank accepted that the project may not have adequate internal technical capacity and face low ownership by the designated implementation authority.

7.2 Supervision:

Bank supervision was strongly supported by the staff of the Colombo office and was highly proactive in assisting in resolving implementation problems, many resulting from breaks on GOSL leadership of the PMU. The Bank took an active role in supporting the daily operation of the PMU, assuring liaison between the PMU, IUCN, MIM, as well as ensuring that financial management and procurement matters were dealt in an effective and timely manner. The Bank also maintained an acceptable level of realism of issues and solutions in its written assessments (although, unfortunately, not its formal reporting). These included the eventual reduction in the geographic scope of the project when evidence was clear that project objectives were at risk in one of the project areas, and support for changing the operating methods of field staff, introduction of more genuinely participatory approaches to villagers, and placing the interest in medicinal plants in a broader context of village self help, following the Mid Term Review.

7.3 Overall Bank performance:

The Bank's overall performance is considered satisfactory, based on its efforts to support and guide GOSL through the supervision of a project, and overcome flaws in ownership and the design of its management arrangements once the decision was taken to proceed.

Borrower

7.4 Preparation:

GOSL established a multi-agency Steering Committee early in the preparation process to facilitate an awareness-building and consultative process concerning the project. This Committee continued to meet periodically as an advisory group, throughout the implementation period. During the preparation period, however, institutions charged with environmental issues were undergoing reorganization and the Department of Ayurveda lacked technical expertise in the area of biodiversity. As a result, GOSL relied heavily on the GEF international partner, IUCN to frame and direct project preparation, in addition to providing technical expertise to complete studies. While understandable and necessary under the circumstances, this later proved to be unsatisfactory as it distanced most of the GOSL agencies that would be expected to participate in implementing the project from first hand direction of the project's content and contributed to uncertain ownership throughout implementation. Later intensive efforts to inform agencies and stakeholders of the project's content and implementation arrangements were laudable, however, could not overcome the lack of felt-ownership had the operation been generated within the country.

7.5 Government implementation performance:

GOSL respected all requirements of the Grant Agreement, however, missed opportunities to become fully engaged in the project owing to frequent changes (5 over the project period) in ministerial affiliation of the Department of Ayurveda and subsequent changes in Commissioner (5). This also led to 4 changes in project director. Under these circumstances it proved difficult for GOSL to absorb project activities and provide a strategic sense to the significance of biodiversity conservation for the traditional medicine practice. It was slow in taking important decisions in areas related to the protection of intellectual property and provided little focused attention. Finally, GOSL did obtain an extension of the project's closing date to permit it to complete vital parts of the program. However, this opportunity was also compromised by a change in political leadership and subsequent re-evaluation of the basic strategy of the project. Therefore, while understandable, the results from the project's perspective are unsatisfactory.

7.6 Implementing Agency:

The project management unit was by design small in number of employees and targeted its functions on facilitation, monitoring and managing the actions of other actors. In spite of four changes in Director, it managed project implementation tasks following acceptable standards of financial management and procurement, with good governance. It was also able to mount a vigorous and successful defense against critics, of its position on intellectual property rights protection. However, the PMU relied heavily on the international partner agency, IUCN, in most decisions affecting the technical outcome of the project. This reliance may have been unavoidable

considering the frequent changes in senior staff and ministerial affiliations, and under other circumstances would have been an unsatisfactory arrangement. However, with limitations, it proved to be a satisfactory decision considering the technical demands of the project, even though the PMU did not itself have technical capacity that could be absorbed by the MIM to support follow-on activity.

In terms of financial management and procurement, implementation issues were identified early and rectified appropriately and in a timely manner. The PMU, field staff and community members made use of all potential opportunities under the project to improve their capacity and competence in financial management and core staff of the PMU were trained in procurement aspects. Legal covenants related to financial management were complied with. Audits of project expenditures were carried out in a timely manner and there are no major pending audit issues. No significant procurement issue arose in the course of the project.

7.7 Overall Borrower performance:

The circumstances of the day, limited the options available to GOSL throughout the periods of identification, preparation and implementation of the project. Frequent elections and subsequent changes in lines of authority over the traditional medicine sector may have deprived GOSL of development of a coherent strategy for the sector into which a project of this type may have been placed. However, as a matter of choice, GOSL permitted these changes to affect the project, even in its last year of implementation, at a basic technical level (the leadership of the PMU and technical agencies) which might have been avoided. Thus, its performance during the project is considered to have been largely unsatisfactory. None-the-less, in the final project year GOSL has shown renewed strategic interest in the project's contributions to both health, and biodiversity protection, and the opportunity for further development of these areas.

8. Lessons Learned

The Sri Lanka Medicinal Plant Conservation and Sustainable Use Project is considered to have been the first of its kind to be undertaken on this scale and with its stated objectives and implementation strategy, focusing directly on the conservation and sustainable use of non-timber species of forest plants. Since the project was launched, at least four additional projects[1] (including a major component in a general biodiversity project) have addressed the same topic, following roughly the same methodology. In this sense, the overarching lesson of the project has been that this area of traditional medicine and indigenous knowledge in general, could be supported through a disciplined and strategic manner as is the case with other areas typically included in "projects". The project has served as a learning exercise for national project staff from other countries under the World Bank's Indigenous Knowledge Development Program, which although based largely in the Africa Region, has begun to influence similar activity in other regions.

Additional lessons can be generated from the project in support of further development of ayurvedic medicine and medicinal plant conservation, as well as general practice of community-driven development. Moreover, the project experience re-enforces lessons affecting

the broader issues of project design and implementation.

a. Lessons Specific to the Conservation and Sustainable Use of Medicinal Plants Operations.
The project would, with additional work, provide models for the further development of traditional medicine and the sustainable use of medicinal plants as one of its key inputs. It may also contribute to the design of self help rural development and poverty alleviation programs, operating through community driven initiatives. Among the experiences that could be examined in greater detail are: collecting and managing traditional knowledge; protecting intellectual property rights; development of practices for the sustainable use of plants in the wild (*in situ*), and propagation and production systems (*ex situ*); supporting apprenticeship in indigenous medicine; and basic elements in pursuing community participation and self help (organization of community groups, management of micro credit, use of communications, and managing micro planning processes). Further details are outlined in Annex 8.

b. Lessons with Broader Application
The experiences of the project highlighted and supported the validity of best practices derived from many previous operations, as well as raising new issues.

The project, through its concept development, illustrates the difficulty in establishing national applications of legitimate international/global concerns. The project was identified at a moment of heightened international awareness and concern for biodiversity protection and well informed international agencies were strong advocates of national action to conserve national biodiversity resources. These agencies were also available to assist governments who wished to use them, to formulate and implement the required programs. However, while national sentiments may have favored such actions, the national development agenda and institutional structures within the GOSL may not have been fully prepared to absorb such initiatives. As a result, the project faced difficulty in generating and maintaining strong GOSL commitment throughout implementation, relying on a small specialized PMU loosely affiliated to a ministry, heavily dependant on an international agency for technical and implementation support. It also brought forward political issues that GOSL may not have been fully prepared to address (protection of intellectual property rights). Clearly, by the completion of the project, various GOSL institutions appear to have internalized selected results of the project. However, this may not always be possible. A similar risk continues to exist in other areas of global concern (controlling HIV/AIDS, mitigating global warming, achieving gender equality, among others). In such areas of global concern, international partners themselves need to be sensitive to host country preparedness to respond.

Much of the record of scientific achievement is anecdotal and difficult to verify as a basis for further application. The project was concerned both with achieving a level of protection and sustainable use of biodiversity resources (medicinal plants) and also in establishing new institutional and behavioral relationships to sustain biodiversity protection and traditional medicine. While largely successful in monitoring and evaluating progress in institutional development (from a social science perspective), the project did not create a sound science-driven monitoring and evaluation system. Future operations that have expectations for improvements in biological science should have professionally designed monitoring and evaluation systems based on experimental design, rather than depending on a social science design.

The project illustrates the need for careful synchronization of project goals with the mandates and agendas of implementing agencies. Having decided at the level of the government to proceed with project, there remained uncertainty about the engagement of the institutions that would assume responsibility for it. Assigning responsibility for a project that was essentially one of biodiversity, to an agency whose central mandate was directed towards a health concern, may have been deemed necessary, considering weaknesses in the Environment Ministry at the time, and the urgency of proceeding. However, the decision made it difficult to build ownership by the responsible agency and raised the subsequent cost of coordination and inter-agency collaboration, that slowed implementation.

Projects with the goal of changing behavior need clear and pre-planned communications strategies. While every project should have a strategy for communication with its stakeholders, those whose basic operating premise is to change behavior should place "communications" at the center of their design. The project suffered from lack of such a strategy both in managing early criticism of its objectives as serving international bio-prospecting, and subsequently in promoting the project in villages. Clearly, project staff were conscientious in consulting stakeholders during preparation in an attempt to build understanding. In addition, staff were given extensive briefings and documentation concerning the project. However, the communications effort was not a managed process in which messages were prepared, staff trained, feedback loops established, and real-time corrections of erroneous information provided. As a result, the cost in time and effort in establishing the required levels of participation in villages was elevated. In a similar vein, while project field staff were well informed, they were not provided with adequate operational guidance on being effective "community mobilizers" (and subsequently, community development officers). Projects based on outreach and interaction with villagers and civil society in general (health outreach, agriculture extension, community development to name a few) should provide specific training of staff in these requisite skills, monitor their performance and provide real-time correction of errors.

The project also provided positive reinforcement of several best practices The project management team began to plan for the sustainable follow-on of project activities early in the implementation period. Following the Mid Term Review, work began on a strategy for turning project activities over to village organizations and institutionalize findings. This had the beneficial effect of raising sustainability and the ownership of the project's results (even if the ownership of the project was weak) to the level of a project "outcome". In addition, recognizing the circumstances that led to the decision to formulate a PMU within the Ministry of Indigenous Medicine, the implementation strategy of the PMU was a good example of minimizing "in-house" functions to the minimum necessary to provide management and accountability, and maximize reliance on contractors for specialized and technical inputs. This applied to the use of IUCN who engaged a large body of short term and long term Sri Lankan experts for most technical work, and a contract system for obtaining research results. Overall, the PMU appears to have managed the risk that in such a strategy, contractors may assume managerial responsibilities.

[1/] Ethiopia - Conservation and Sustainable use of Medicinal Plants, Ghana - Northern Savannah Biodiversity Project, Jordan - Conservation of Medicinal and Herbal Plants Project, Mongolia - Conservation and Sustainable Use of Medicinal Plants; each has drawn on GEF support for their biodiversity aspects of developing traditional medicine and traditional knowledge.

9. Partner Comments

(a) Borrower/implementing agency:

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சுதேச வைத்திய அமைச்சு
MINISTRY OF INDIGENOUS MEDICINE

330, ශ්‍රීමත් ජෝදන, කොළඹ 2. 330, யூனியன் பிளேஸ், கொழும்பு 2. 330, Union Place, Colombo 2.

My No. IM/S/14/1 Your No. Date 01.12.2004

Mr. Malclm Jansen
Task Team Leader,
Conservation and Sustainable
Use of Medicinal Plants Project.

Dear Mr. Jansen,

CONSERVATION AND SUSTAINABLE USE OF MEDICINAL PLANTS PROJECT IMPLEMENTATION COMPLETION REPORT.

I wish to inform you that the Draft Implementation Completion Report of the above Project received by me and I went through it carefully.

We greatly appreciate your effort to prepare this report within a very short period of time immediately after the completion of the Project and the manner which you have shown to evaluate and analyze the outcome and the results of each and every component of the project.

I enclosed herewith my comments as the Sri Lankan official response to the Draft Implementation Completion Report.

Yours Sincerely,

W.A. Karunasena.
Secretary,
Ministry of Indigenous Medicine.

I am of the view that the influence and the effects of this Project are visible in every corner of the Indigenous Medicine Sector in Sri Lanka. Specially at the macro level, the Government has realized the importance of Indigenous Medicine System and took initial steps to safeguard the values of traditional system of medicine by creating a separate portfolio for Indigenous Medicine. Furthermore the Ministry of Indigenous Medicine in the first instance has undertaken to prepare a National Policy in Indigenous Medicine System and now a draft document is ready for public hearings. In addition a complete set of strategies are being prepared in accordance with the national policy document. At the same time a time bound action plan have been proposed to be implemented through 2004 to 2006 for the key components of the Project and as will as for the entire sector.

Even in the micro level, it can be seen throughout the island, that there is a growing awareness among the general public especially within the school society, about the importance of sustainable use of Medicinal Plants and there is a big interest to grow Herbal Plants. Therefore Ministry of Indigenous Medicine has to play a vital role in the near future to cater to the growing demand of Herbal Medicine. In keeping lying with the demand Ministry has already prepared a 5 year intergrated development plan which consist of more than 25 projects. The plan convincingly reflex a major portion to Medicinal Plant Related Programmes.

Within this background it is imperatively important the lessons what we have learned out of this project. Your report open our eyes about the strength and the weaknesses of the institution of this sector and the critical analysis provide us the way we should follow for our future activities in relation to conservation of sustainable use of Medicinal Plants. It also gives us an eye opener on our methods and strategies for ex-situ and in-situ conservation practices of Herbal Plants. One of the positive impact of the project that guided the Government has materialized

in the 2005 Budget Proposals. In the first time of the history of Indigenous Medicine Sector Government has allocated Rs.100 Million for the year 2005 for development commercial scale cultivation of Medicinal Plants.

We understand that the arrangement of the institutional framework of the project is no doubt highly complex and when it came for the implementation stage it was a cumbersome process. Especially for the higher officers devoting time for a Project like this is very difficult. We also notice that frequent changes of the higher officials in all institution was badly affected for the activity of the Project and the impact was more or less negative.

I have no doubt that the comments and observations made in your report will greatly benefit for Indigenous Medicine Sector for its future Planning and stream lining of responsibilities of the higher officials and Heads of Organizations in the Sector.

(b) Cofinanciers:
Not Applicable

(c) Other partners (NGOs/private sector):
Not Applicable

10. Additional Information

The project has produced a valuable set of analyses and evaluations that are available through the World Bank Office, Colombo; IUCN, and the Ministry of Indigenous Medicine, which are indicated in Annex 7.

Annex 1. Key Performance Indicators/Log Frame Matrix

Outcome / Impact Indicators:

Indicator/Matrix	Projected in last PSR[1]	Actual/Latest Estimate
DO1. a) Number of village action plans being implemented where harvest of medicinal plants from the wild within permissible limits.	Village Action Plans being implemented: 39	Village Action Plans being implemented: 39 (100%)
DO2. a) Number of medicinal plants for which cost-effective propagation and cultivation techniques are available.	Number of species: 50	Number of species 25 (50%)
b) Number and diversity of medicinal plants species propagated and grown in government nurseries.	Number of species: 1,850	Number of species: 1,455 (79%)
c) Number of farmers using propagation and agronomic information generated through the project.	Number of farmers: 1,750	Number of farmers: 1,680 (96%)
DO3. a) Guidelines developed and implemented for protecting traditional knowledge and plant resources related to the project.	Guidelines Produced : 1	Guidelines were developed and partially implemented
b) New recommendations for strengthening legislation and regulations related to conservation and use of medicinal plants.	Recommendations (set): 1	Draft legislation has been developed and is being reviewed by GOSL for potential future enactment
c) National database developed.	Database: 1	Database 1, containing information on over 1,000 species
d) Number of schools and students exposed to educational programs.	Schools: 75 (25,000 students)	Schools: 80 (27,000 students) - (108%)
e) Number of persons with skills related to medicinal plant conservation and use	Persons: 2,200	Persons: 3,146 (143%

Output Indicators:

Indicator/Matrix	Projected in last PSR[1]	Actual/Latest Estimate

[1] End of project

Annex 2. Project Costs and Financing

Project Cost by Component (in US$ million equivalent)

Component	Appraisal Estimate US$ million	Actual/Latest Estimate US$ million	Percentage of Appraisal
Expansion of In-situ Conservation	2.07	1.12	54
Expansion of Ex-situ Cultivation and Conservation	0.46	0.95	206
Information and Institutional Support	2.54	3.30	129
Total Baseline Cost	5.07	5.37	
Total Project Costs	5.07	5.37	
Total Financing Required	5.07	5.37	

Source: Borrower. All costs include the Physical and Price Contingencies

Project Costs by Procurement Arrangements (Appraisal Estimate) (US$ million equivalent)

Expenditure Category	Procurement Method[1] ICB	NCB	Other[2]	N.B.F.	Total Cost
1. Works	0.00 (0.00)	0.00 (0.00)	0.18 (0.15)	0.00 (0.00)	0.18 (0.15)
2. Goods	0.00 (0.00)	0.00 (0.00)	0.90 (0.86)	0.40 (0.00)	1.30 (0.86)
3. Services **TA, Training, Studies & Services***	0.00 (0.00)	0.00 (0.00)	3.03 (3.03)	0.03 (0.00)	3.06 (3.03)
4. Miscellaneous (Labour, Project Management Personnel, Staff Allowances	0.00 (0.00)	0.00 (0.00)	0.52 (0.52)	0.01 (0.00)	0.53 (0.52)
Total	0.00 (0.00)	0.00 (0.00)	4.63 (4.56)	0.44 (0.00)	5.07 (4.56)

Source: Project Appraisal Document, Page 51, Annex 6

Project Costs by Procurement Arrangements (Actual/Latest Estimate) (US$ million equivalent)

Expenditure Category	Procurement Method[1] ICB	NCB	Other[2]	N.B.F.	Total Cost
1. Works	0.00 (0.00)	0.23 (0.19)	0.05 (0.04)	0.00 (0.00)	0.28 (0.23)
2. Goods	0.00 (0.00)	0.14 (0.10)	0.39 (0.29)	0.04 (0.00)	0.57 (0.39)
3. Services TA, Training, Studies & Services*	0.00 (0.00)	0.10 (0.10)	3.50 (3.50)	0.24 ()	3.84 (3.60)
4. Miscellaneous (Labour, Project Management Personnel, Staff Allowances	0.00 (0.00)	0.00 (0.00)	0.55 (0.34)	0.17 (0.00)	0.72 (0.34)
Total	0.00 (0.00)	0.47 (0.39)	4.49 (4.17)	0.45 (0.00)	5.41 (4.56)

Source: Borrower

Notes:

Figures include taxes and duties. Figures rounded to the nearest US$100,000;
N.B.F: Non Bank Financed; "Other": Also includes (in addition to the definition below) sole source procurement
Civil Works: 5 MPCA Buildings, 2 New Medicinal Plant Gardens, Development of 3 existing Nurseries, Small Community Buildings
Goods: Vehicles, Computer Database Equipment, Machinery for Drug production Centres, Drugs and Resource Materials
Services: TA, Training, Studies & Services [1) Institutional Development, 2) Local Training, 3) Development of Educational Materials, 4) Specialized External Training, 5) Studies/Research/Service Contracts 6) Miscellaneous Services]
The Source of Financing is GEF: however as there is no provision to indicate this in Foot Note 1, we have chosen the option of "Bank Loan"

1/ Figures in parenthesis are the amounts to be financed by the Bank Loan. All costs include contingencies.

2/ Includes civil works and goods to be procured through national shopping, consulting services, services of contracted staff of the project management office, training, technical assistance services, and incremental operating costs related to (i) managing the project, and (ii) re-lending project funds to local government units.

Project Financing by Component (in US$ million equivalent)

Component	Appraisal Estimate			Actual/Latest Estimate			Percentage of Appraisal		
	Bank	Govt.	CoF.	Bank	Govt.	CoF.	Bank	Govt.	CoF.
Expansion of In-situ Conservation	2.07	0.00		1.12	0.00		54.1	0.0	
Expansion of Ex-situ Cultivation and Conservation	0.45	0.01		0.94	0.01		208.9	100.0	
Information and Institutional Support	2.05	0.49		2.51	0.79		122.4	161.2	
Total	4.57	0.50		4.57	0.80		100.0	160.0	

Source: Borrower

The Source of Financing is GEF; as there is no provision to indicate this in the columns above, we have chosen the option of "Bank"

Annex 3. Economic Costs and Benefits

An economic analysis was not conducted at project completion

Annex 4. Bank Inputs

(a) Missions:

Stage of Project Cycle	No. of Persons and Specialty (e.g. 2 Economists, 1 FMS, etc.)		Performance Rating	
Month/Year	Count	Specialty	Implementation Progress	Development Objective
Identification/Preparation				
1995	*10*	Legal Counsel (1); Social Scientist (1); Consultant Ethnobotanist (1); Consultant Forester/Conservation Specialist (1); Senior Agriculturists (1), Snr. Envt Specialist (1); Environmental Engineer (1); Consultant Economist (1); Procurement Specialist (1); Financial Management Specialist (1)		
Appraisal/Negotiation				
September 1997	*10*	Legal Counsel (1); Social Scientist (1); Consultant Ethnobotanist (1); Consultant Forester/Conservation Specialist (1); Senior Agriculturists (1), Snr. Envt Specialist (1); Environmental Engineer (1); Consultant Economist (1); Procurement Specialist (1); Financial Management Specialist (1)		
Supervision		As the Project was Co-Task Managed from the Colombo Office, supervision was conducted on a continuous basis. The undermentioned Supervision Missions were "formal" missions conducted by the Team.		
04/08/1998	*2*	Envt. Specialist/Co-TTL (1); Envt. Engineer (1)	S	S
10/08/1998	*3*	Snr. Agriculturist/TTL (1), Snr. Envt Specialist/Co-TTL (1); Envt. Engineer (1)	S	S
04/23/1999	*4*	Snr. Envt Specialist/Co-TTL (1); Envt. Engineer (1); Operations Assistant (1); Procurement Specialist (1)	S	S
10/23/1999	*6*	Snr. Envt Specialist/TTL (1); Envt. Engineer/Co-TTL (1);	S	S

			Participatory Specialist (1); Operations Analyst (1); Procurement Specialist (1); Financial Mgmnt. Specialist (1)		
	04/04/2000	*5*	Snr. Envt Specialist/TTL (1); Participatory Specialist (1); Program Assistant (1); Procurement Specialist (1); Financial Mgmnt. Specialist (1)	S	S
	10/18/2000	*7*	Snr. Envt Specialist/TTL (1); Envt. Engineer/Co-TTL (1); Forest Ecologist (1); Participatory Specialist (1); Operations Analyst (1); Procurement Specialist (1); Financial Mgmnt. Specialist (1)	S	S
	02/03/2001	*3*	Snr. Envt Specialist/TTL (1); Envt. Engineer/Co-TTL (1); Operations Analyst (1)	S	S
	07/01/2001	*5*	Envt. Engineer/Co-TTL (1); Operations Analyst (1); Procurement Specialist (1); Financial Mgmnt. Specialist (1); Consultant Sociologist (1)	S	S
	03/19/2002	*3*	Snr. Envt Specialist/TTL (1); Envt. Engineer/Co-TTL (1); Social Development Specialist (1); Operations Analyst (1); Procurement Specialist (1); Financial Mgmnt. Specialist (1)	S	S
	11/19/2002	*3*	Snr. Envt Specialist/TTL (1); Envt. Engineer/Co-TTL (1); Operations Analyst (1)	S	S
	03/06/2003	*6*	Snr. Envt Specialist/TTL (1); Envt. Engineer/Co-TTL (1); Social Development Specialist (1); Operations Analyst (1); Procurement Specialist (1); Financial Mgmnt. Specialist (1)	S	S
	08/23/2003	*3*	Snr. Envt Specialist/TTL (1); Envt. Engineer/Co-TTL (1); Operations Analyst (1)	S	S
ICR					
	03/06/2004	*3*	Snr. Envt Specialist/TTL (1); Envt. Engineer/Co-TTL (1); Operations Analyst (1)	S	S
	06/06/2004	*3*	Snr. Envt Specialist/TTL (1); Envt. Engineer/Co-TTL (1); Operations Analyst (1)	S	S
	08/01/2004	*3*	Envt. Engineer/Co-TTL (1); Operations Analyst (1); ICR-Consultant (1)		

(b) Staff:

Stage of Project Cycle	Actual/Latest Estimate	
	No. Staff weeks	US$ ('000)
Identification/Preparation	60.4	144.9
Appraisal/Negotiation	28.1	61.9
Supervision	127.97	230.57
ICR	9	30.0
Total	225.47	467.37

Source: (a) 1994-1999: COSRR20 Reports (b) 2000 - 2004: SAP Project Detail Reports

Annex 5. Ratings for Achievement of Objectives/Outputs of Components

(H=High, SU=Substantial, M=Modest, N=Negligible, NA=Not Applicable)

	Rating
☐ *Macro policies*	○ *H* ○ *SU* ○ *M* ○ *N* ● *NA*
☐ *Sector Policies*	○ *H* ○ *SU* ○ *M* ○ *N* ● *NA*
☐ *Physical*	○ *H* ○ *SU* ● *M* ○ *N* ○ *NA*
☐ *Financial*	○ *H* ○ *SU* ● *M* ○ *N* ○ *NA*
☐ *Institutional Development*	○ *H* ○ *SU* ● *M* ○ *N* ○ *NA*
☐ *Environmental*	○ *H* ○ *SU* ● *M* ○ *N* ○ *NA*
Social	
☐ *Poverty Reduction*	○ *H* ○ *SU* ○ *M* ○ *N* ● *NA*
☐ *Gender*	○ *H* ○ *SU* ○ *M* ○ *N* ● *NA*
☐ *Other (Please specify)*	○ *H* ○ *SU* ○ *M* ○ *N* ○ *NA*
☐ *Private sector development*	○ *H* ○ *SU* ○ *M* ○ *N* ● *NA*
☐ *Public sector management*	○ *H* ○ *SU* ○ *M* ○ *N* ● *NA*
☐ *Other (Please specify)*	○ *H* ○ *SU* ○ *M* ○ *N* ○ *NA*

Annex 6. Ratings of Bank and Borrower Performance

(HS=Highly Satisfactory, S=Satisfactory, U=Unsatisfactory, HU=Highly Unsatisfactory)

6.1 Bank performance	*Rating*			
☒ *Lending*	○ *HS*	● *S*	○ *U*	○ *HU*
☒ *Supervision*	○ *HS*	● *S*	○ *U*	○ *HU*
☒ *Overall*	○ *HS*	● *S*	○ *U*	○ *HU*

6.2 Borrower performance	*Rating*			
☒ *Preparation*	○ *HS*	○ *S*	● *U*	○ *HU*
☒ *Government implementation performance*	○ *HS*	○ *S*	● *U*	○ *HU*
☒ *Implementation agency performance*	○ *HS*	● *S*	○ *U*	○ *HU*
☒ *Overall*	○ *HS*	○ *S*	● *U*	○ *HU*

Annex 7. List of Supporting Documents

Ministry of Indigenous Medicine

(1) A National Strategy to Continue the Initiatives of the Conservation and Sustainable Use of Medicinal Plants Project, October 2004

(2) National Policy on Sri Lankan Systems of Indigenous Medicine, Draft, November 15, 2004

World Bank Documents

(1) Mission Aide Memoirs

(2) Project Appraisal Document

Studies Financed under the Project

	Name of Report	Author	Date
1	An Investment Proposal for MPCP: Supplementary Information for the Investment Proposal of December 1996: Annexures	IUCN Sri Lanka	Feb, 1997
2	Medicinal Plants Conservation Areas Program: A socio-economic Study of the proposed villages, program implementation and potential impact	IUCN Sri Lanka	March, 1997
3	Project Appraisal Report: Conservation and Sustainable Use of Medicinal pants; Report 17160-CE	World Bank	November, 1997
4	Training on Participatory Baseline Survey Design	Sejal Worah, IUCN	December 1998
5	Annual Reports of the CSUMPP	PMU/MIM	1999, 2000, 2001
6	Medicinal Plant Resource Inventory	Jeremy Russel-Smith, IUCN	June 1999, 2000, 2001
7	Impact Monitoring Reports: 1, 2, 3, 4	Environment and Management Lanka (Pvt) Ltd	2000, 2001, 2002
8	Operational Support to the Ethnobotanical Activities	William Milliken, IUCN	1999, 2000, 2001, 2003
9	Review of Socio-Economic Surveys and Community Mobilization	Sejal Worah, IUCN	June 1999
10	Review, Assessment and Analysis of Socio-Economic Surveys and Village Project Management Committees	Sejal Worah, IUCN	September 1999
11	Medicinal Plants - Processing and Quality Control	M K Raina, IUCN	December 1999
12	Communication Strategy	IUCN Sri Lanka	July, 2000
13	Training needs assessment and Training Plan	IUCN Sri Lanka	Feb, 2000
14	Village Action Plan Development	Sejal Worah, IUCN	May 2000
15	Report of the Mid Term Review based on Community Based Assessments in Rajawake and Naula Conservation Areas (28 & 30, July 2000) and Assessment by Secondary Level Project	Organised by IUCN and Facilitated by IPID	July and August 2000

	Stakeholders (3rd & 4th Aug 2000)		
16	Legal Framework to Safeguard Traditional Knowledge Relating to the Use of Medicinal Plants	Anandalal Nanayakkara, IUCN	October, 2000
17	Marketing of Medicinal Plants	Lakshman J K Hettiaratchi, IUCN	November, 2000
18	Mid Term Evaluation Report	PMU Sri Lanka, World Bank	November 2000
19	Revised Conceptual Framework for Monitoring and Evaluation of Impacts of the CSUMPP	Environment and Management Lanka (Pvt) Ltd	November, 2000
20	Farming Systems Research on Selected Medicinal plants at Naula	Dr D K N G Pushpakumara, Dr B Marambe, Prof K G A Goonasekara, Dr G Hitinayaka, dr S P Nissanka/University of Peradeniya	2001
21	Review of Medicinal Plants Processing and Review of Drug Manufacturing of the Sri Lanka Ayurvedic Drug Cooperation	M K Raina, IUCN	2001
22	Medicinal Plants – Processing and Quality Control	M K Raina, IUCN	August, 2001
23	Statistics on the National Demand for Medicinal Plants	Mr Nimal Abeywardana & L J K Hettiaratchi, IUCN	September, 2001
24	Eco-tourism in the Medicinal Plants Conservation Areas	Mr N U Yasapala, IUCN	September, 2001
25	Ayurveda in Social Studies: Teachers handbook	National Institute of Education	2002
26	Development of Cost – Effective Propagation Techniques and Nursery Practices for Masbedda, Rat Handun, Wal Kahambiliya, Elabatu and Welmadata	Prof. Ranjith Senaratne, Dr G A Sayathilake, Dr S Subasinghe, D L C Kumari, Dr S P Sapumohotti/University of Ruhuna	2002
27	Development of Propagation Techniques and Nursery Practices for Nil Awariya (indigofera tinctoria); Katuwelbatu (Solanum verginianum); Polpala (Aerva lanata)	L S S Pathiratna, Priyani Senevirathne/ Industrial Technology Institute	2002
28	Investigation of Propagation Techniques and Nursery Practices for Amukkara (Withania somnifera	Dr L S R Arambewela, Dr Y M H B Yapabandara, Dr N Ediriweera, Dr N R de Silva/Industrial Technology Institute	2002
29	Investigation of Propagation Techniques and Nursery Practices for Bim Kohomba (Munronia pinnata); Ekaweriya (Rauvolfia serpentina), Kotala Himbutu (Salacia reticulata) and Rat Nitul (Plumbago indica); Santalum album, Coscinium fenestratum, Piper longum, and Hemidesmus indicus	Dr L S R Arambewela, Dr Y M H B Yapabandara, Dr N Ediriweera, Dr N R de Silva/ Industrial Technology Institute	2002
30	Thalpatha Osumahima- Volume I; II;III	BMARI	2002
31	Institutional Assessment of Village Project Management Committees (VPMCs) and Conservation Area Management Committee (CAMCs) –	A P Dainis, IUCN	January 2002

32	Compendium of Medicinal Plants - Volume I, II, III, IV	BMARI	2002-2003
33	EBS Field Manuals; Volumes 1,2,3,4	BMARI	2002-2004
34	Management Plans for Bibile (2003) and Kanneliya (2002)	A N S Baminiyawatta, IUCN	2002, 2003
35	Acclimatization and Field establishment of Munronia pinnata propagated trough tissue culture,	University of Sri Jayawardanapura	2003
36	Case Study on the Learning Experience from the Implementation Activities at Ritigala	Mallika R Samasanayaka and Professor Kamal Karunayake with the IPID Study Team	2003
37	Commercial Scale Production of Masbedda (Gymnema sylvestre) and Rat Handun (Pterocarpus santalinus)	S Subasinghe,K K I U Aruna Kumara, D L C Kumari/University of Ruhuna	2003 2003
38	Development of Intercropping Practices for Five Medicinal Plants (Nil Awariya, Katuwelbatu, Polpala, Rat Nitul and Thippili) - under Rubber	L S S Pathirathne/Rubber Research Institute	2003
39	Establishing of a Participatory Monitoring and Evaluation System for Field Level Implementation	Mallika R. Samaranayaka, IUCN	January, 2003
40	Participatory Monitoring and Evaluation System for Field Level Implementation	Mallika Samaranayake/IPID, IUCN	January 2003
41	Strategy for Transferring Project Responsibilities Community Based Organizations (VPMCs/CAMCs)	A P Dainis, IUCN	February, 2003
42	Legal Framework to Safeguard Traditional Knowledge Relating to the Use of the Medicinal Plants	D M Karunarathne, IUCN	March, 2003
43	Impact Evaluation Report	Environment and Management Lanka (Pvt) Ltd	July 2003
44	Techno-guides on Cultivation of Medicinal Plants Vol I, II	Mervyn Joseph/IUCN, Sandya Abeysekara/PMU	2004
45	Back-stopping Support Program on Participatory Monitoring and Evaluation	Mallika Samaranayake/IPID, IUCN	April 2004
46	4 Case Studies on best practices including participatory approaches	Project Officers, PMU	June 2004
47	Assessment of Project Impact on the Indigenous Community of Ratugala – Bibile MPCA	Sisira Kumarasiri, IUCN	June 2004
48	Case Study on the Contract Research Program of the CSUMPP	Ranjith Mahindapala, IUCN	June 2004
49	Case Study on the Date Base in the CSUMPP	Ranjith Mahindapala, IUCN	June, 2004
50	Case Study on the Legislation for Safeguarding Traditional Knowledge Related to the Use of Medicinal Plants (Activity of the CSUMPP)	Ranjith Mahindapala, IUCN	June 2004
51	Development of a Participatory Business Plan to Establish Medicinal	Peter Rezel, IUCN	June 2004

	Plants and Non-Timber forest Product-based Community Enterprises in the Naula, Rajawaka and Kanneliya MPCAs		
52	Institutionalization of VPMCs/CAMCs	S W K J Samaranayake/IPID, IUCN	June 2004
53	Lessons from the Introduction and Implementation of Micro Plans	Kapila Fernando, IUCN	June 2004
54	Collection & Establishment of Germplasm of Important (Endemic, rare, threatened) Medicinal Plants in Sri Lanka- Ganewatta Medicinal Plants Garden	D S A Wijesundara, M M D J Senartne, C Jayasinghe/Royal Botanical Gardens, Peradeniya	July, 2004
55	Development of Agronomic Practices for Sudu Handun (Santalum album)	K U Tennakoon, I A U N Gunatillake, C V S Guntillake, W A D P Wanigasundara, H P Rathnasiri/University of Peradeniya	July, 2004
56	Development of Propagation Techniques for Six Medicinal Plants Species (Hingurupiyali, Kalanduru, Kiribadu, Sassanda, Ela Pitawakka, and Hathawariya); Senehekola (Cassia senna), Lanka Thuwarala (Velleriana mooni), andAsamodagam (rachyspermum roxburghianum)	Prof I A U N Gunatillake, Prof C V S Gunatillake, Dr K U Tennakoon, Prof M D Dassanayake, Prof W A D P Wanigasundara/University of Peradeniya	July, 2004
57	Medicinal Plants Project at Buttala – Adaptive Research Trial	Janakie Abeywardene/Sri Lanka Freedom Campaign Board	July, 2004
58	Testing of Economically important Medicinal Plants species as intercrops with Rubber (Hevea) under smallholder conditions	L S S Pathiratna/Rubber Research Institute	July, 2004
59	Sustainability Studies on Selected Medicinal Plants Species in Bibile, Kanneliya, Rajawaka and Naula MPCAs	IUCN Sri Lanka	July, 2004
60	Assessment of Socio-Economic Impact	Mallika Samaranayke/IPID, IUCN	August 2004
61	Technological Enhancement and Support for CSUMPP	Jaanaki Gooneratne/IUCN	August 2004

Additional Annex 8. Agenda for Additional Learning and Knowledge Sharing

The Sri Lanka Medicinal Plant Conservation and Sustainable Use Project is considered to have been the first of its kind to be undertaken through the World Bank, focusing directly on the conservation and sustainable use of non-timber species of forest plants. Since the project was launched, at least four other projects (including a major component in a biodiversity project) have addressed the same topic following its methodology. However, basic systemic knowledge is required in support of such projects.

This project has developed valuable experience which would contribute to support the further development of traditional medicine and the sustainable use of medicinal plants as one of its key inputs; and also support future self help rural development and poverty alleviation programs, operating through community driven initiatives. The key elements of the project's experience could be captured under these two broad headings.

1. Generating Support for Sustainable Medicinal Plant Use and Traditional Medicine

The project pursued specific objectives that would directly support the practice of Ayurvedic medicine, by promoting the availability of medicinal plants, both taken from the wild, and produced "*ex situ*". By the end of the project, there was anecdotal evidence that the incidence of man-related destruction of natural stocks of plants and their environments through over-harvesting and the use of inappropriate methods had been reduced, fire risks had been moderated. Moreover, the balance between supplying medicinal plant materials through harvesting and *ex situ* production had begun to shift in favor of production. In addition, there was a renewed interest in traditional medicine among a younger generation of villagers, as an alternative to "western medicine", with implications for costs to households, access to care and timeliness of treatments. GOSL has expressed interest in developing a more professionalized traditional medicine practice (see Annex 9). To support this, and to offer information to a wider audience, it would be beneficial to examine in detail, the experience of the project, under the following headings:

a) Accumulating and Managing Etho-botanical and Traditional Medicine Information: The project initiated surveys with communities to establish a base-line inventory of species important to local practices of ayurvedic medicine. It also undertook the translation and conservation of historic records of indigenous medical practices. This information has been archived with a national research institute (BMARI) which is developing protocols and guidelines for access to this information, as well as the information technology required to provide access. While this process has proven difficult[1], an analysis of the mission and purposes of the data collection exercise; processes and methods that have been used, their advantages and disadvantages, costs; and of alternative practices that might be adopted would provide a basis for future applications.

b) Managing Intellectual Property Rights: The project anticipated that issues related to the protection of traditional knowledge from unwarranted exploitation could occur, as proved to be the case. GOSL began a process of addressing the issue, and produced draft legislation and regulations that could protect the rights of persons holding traditional medicine information.

Unfortunately, this legislation has not been enacted[2]. GOSL does not appear to have a clear understanding of the social and economic consequences of their failure to conclude this activity and there is some opinion that these consequences may be minimal. A review of information concerning the international experience with the transference of traditional medical knowledge would help clarify the risks to Sri Lanka's indigenous medical system in the current situation.

c) Sustaining Yields of Medicinal Plants in the Wild: The project has produced two studies, based on field observations, of the likely sustainable yield of two perennial medicinal plants under a prescribed harvesting procedure. This is a modest beginning to a process that should be expanded. An analysis of the procedures used to initiate and conduct these studies would assist in developing a further efficient plan; and would cover; criteria for identifying candidate plants with stakeholders; selection and training of monitors/para foresters to collect yield information; information management and dissemination; and mobilization of village monitors to assure continued monitoring and reporting on yields and plant health. A process management, cost and financing plan would also be required.

d) Promoting the Production of Medicinal Plants: The project concluded a satisfactory program investigating the propagation of about 22 species of medicinal plants. It used a contract research process that engaged national "centers of excellence" which produced in most cases, relatively quick, and low cost results. Given the interest in producing medicinal plants as an income generating enterprise, the experience of the propagation work should be analyzed and costed with the object of scaling it up. However, important work is required to develop production recommendations that can be used by farmers, either on a crop production basis, or as part of a farming systems approach, if the overall strategy of promoting production "*ex situ*" is to be achieved.

e) Promoting Apprenticeship: The project undertook the sponsorship of apprenticeships for young persons, attached to well recognized ayurvedic medicine masters. This program, the "Gurukula" program, stimulated interest, and increased the network of practitioners in rural areas under the project. An analysis of the program that covered criteria for selecting candidates, their qualifications and motivations; selection of masters; content, duration and validation of training/apprenticeships; post apprenticeship experience of candidates; management, costs and supervision; would provide a basis for scaling up the program.

Information developed under these headings would be most applicable to those undertaking or modifying programs that support ayurvedic medicine. To this, additional guidance and learning can be taken from the project that has applications beyond ayurvedic medicine or medicinal plant projects.

2. Integrating Specific Goals for Conservation and Community Self Help

The project had as its primary goal, a well targeted objective of conserving medicinal plant stocks in the wild, and promoting their sustainable use, as a contribution to sustaining the traditional practice of ayurvedic medicine and global biodiversity. It sought to engage communities as first-in-line partners in this effort. This concept reflected years of experience and best practice in

such fields as forestry conservation, environmental protection and biodiversity conservation, that showed that conservation solely through the prevention of use was generally not effective. The project design took into account that communities would be less responsive to control and regulation than incentives to adopt the project's objectives as their own and modify behavior to sustain them.

By the project's mid term, in spite of some positive results (increased awareness of issues, formation of village organizations, launching selected community help activities) it became clear that action plans that were exclusively focused on sustainable use and conservation *in situ* were not generally effective in mobilizing wide-spread support. In response, the project reformulated its main operating strategy for assisting communities. In place of plans to conserve and sustain the use of plants as a main focus of activity (largely through traditional *in situ* conservation activities), communities were encouraged to develop community development self help plans (micro plans) that addressed the broader interests in improving general income levels and community well-being. Actions for the conservation and sustainable use of natural resources would be a contributor to the overall micro plan, not its goal. Project assistance would be expanded to include the provision of grants to co-finance activities within the micro-plan, and to provide initial funding for a community credit facility or revolving fund to be administered by the community.

The project, therefore, adopted a strategy that had been successful elsewhere, that conservation and sustainable use of community resources cannot be effectively achieved as an end in itself, and should be embedded in the communities concern for livelihood, social development, and, in the case of medicinal plants, health. This may be the primary lesson of the project.

The introduction of micro plans in the project was not problem free, and a project-financed "case study"[3] of micro planning provided insights into how it could have been improved. Moreover, the micro planning process also opened the risk that the priority to be given to the original goals of protecting the biodiversity base that supports traditional medicine, could be significantly lowered or lost. However, since the GOSL expects to continue the use of community participation both in the further development related to forest and wildlife conservation and to traditional medicine[4], it would be beneficial to re-examine the experience under the following headings:

a) Organization of Community and Village Self Help Groups. The VPMCs and their supporting CAMCs were developed under the impetus of conservation and sustainable use of medicinal plants (a relatively narrowly defined mission). They are, however, being converted into "not-for-profit" corporations with a wider mandate for community development. Analysis of their corporate structure, roles and responsibilities, the selection and training of officers, financial basis and sustainability, insights into the effective "empowerment" of such entities, their acceptability and integration with pre-existing institutions, among other features, would assist the evaluation of this model for institutionalizing community self help and establish the basis for replicating it.

b) Performance of Micro Credit and Revolving Funds: The project adopted the concept of transferring funds to VPMCs ("seed funds") to complement funds generated by the members (core funds) with the objective of establishing community managed credit facilities. In so doing, the project adopted a practice that is widely recognized as building local empowerment,

community savings, gender equality, as well as a stronger income base. Further analysis of the record of performance including types of loans made, sub projects financed, evaluation criteria for loan applications, credit management requirements and guidelines, financial stability and sustainability of the fund, and capacity building for officers would assist in further adaptation of the tool.

c) Communications for Community Development: The project engaged a cadre of "social mobilizers", later referred to as community development officers, to establish contact with villages and organize the VPMCs around project objectives. This staff, as well as other project staff, were extensively briefed on the project objectives and design prior to assuming their responsibilities. They did not, however, receive training or guidelines in how to conduct a social mobilization activity in a village or receive guidance on the actual messages and communications processes that would lead villagers, although a communications strategy based on a classic "Information, Education and Communications (IEC) model was developed. However, the number of VPMCs established verifies that many Community Development Organisations (CDOs) did succeed. An analysis of the methods used by CDOs in community, their means of communicating with villagers mobilization including use of the IEC approach, the personal characteristics, qualifications and attitudes of the CDOs themselves, and the system that supported CDOs, would provide a basis for expanding recruitment, training, improving management, strengthening guidelines and communications packages, necessary for GOSL to further adopt this methodology in community development in forestry as well as indigenous medicine.

d) Micro Planning Process: By the end of the project, all VPMCs had produced a micro plan covering their engagement with the project. Many of these were relatively modest in scope, having concentrated on activities related to medicinal plants without addressing other community needs, and overly dependant on project provided funding without seeking funding from other community development sources. However, most of the elements of a successful micro planning process have been now identified in the Sri Lanka context, even if not practiced systematically. To support the further adaptation of the micro planning process, GOSL would now be able to produce an operational guideline (manual) based on experience, to support micro planning as a continuous activity, addressing (i) initiating a participatory process; (ii) developing basic community data; (iii) identification of community priorities, activities and sources of support (iv) identification of income earning possibilities, within and outside the specific ambit of a "project interest"; and (v) applying the participatory monitoring and evaluation method, based on project experience and documentation. Moreover, any such process should address the issue of maintaining an appropriate alignment of interest in economic development on one hand and the protection of the natural resource base on the other. This would also serve as a basis for further training of community leaders.

[1/] Ranjith Mahindapala (June 2004), *Case Study on the Database in the Medicinal Plants Project*, IUCN

[2/] Ranjith Mahindapala (June 2004), *Case Study on Legislation for Safeguarding Traditional Knowledge Related to the Use of Medicinal Plants*, IUCN

[3/] Kapila Fernando (June 2004), *Lessons from Introduction and Implementation of Micro Plans*, IUCN

[4/] A.P. Dainis (February 2003), *Strategy for Transferring Project Responsibilities to Community-Based Organizations*, IUCN

Additional Annex 9. Options for Future Government Intervention to the Indigenous Medicine Sector

Development Objectives and Benefits

Sri Lanka's population is served through both "western" and traditional (ayurvedic) medical practices. The expansion of the western medical practice, which has received support through the World Bank and other donor agencies, is a major factor in the GOSL poverty reduction and economic growth strategies. However, a large segment of the population, particularly among the poor and the rural also depend on traditional or indigenous medical practices for maintaining health and receiving treatment. In fact, for many, reliance on Indigenous Medicine (IM) has been their only option. Recognizing this, and as a complement to its policy for supporting the development of the western-tradition health sector, GOSL has also enunciated a new and coherent policy for developing and supporting the IM sector.

The policy for IM as outlined in a policy brief of the new Strategic Planning department of the MIM, has as its objectives the preservation and expansion of knowledge related to IM, assurance of quality and safety standards in traditional medicines, remedies and devices, and the promotion of a code of ethical behavior among practitioners of IM. In effect, the policy is to provide Sri Lanka with an indigenous health maintenance option that is safe, efficacious and accessible. GOSL will undertake an action program to begin to operationalize this policy over the next 4-5 years.

The principal beneficiaries of the policy and a program to implement it will be the poor and rural population who depend on IM practices and practitioners for a majority of their health care needs. While also being served by an expanding availability of western health care system, this population would have the option of rationing their use of these services considering such factors as cost, access, and timeliness, while not forgoing health maintenance and treatment offered through IM. Indigenous Medicine may also offer more home-produced or community-produced remedies that conserve cash among the poor.

On a secondary level, practitioners of IM, and producers of Ayurvedic Drugs, Cosmetics and Devices (ADCDs) will also benefit from this policy through finding improved access to traditional knowledge, reliability of plant and other raw materials supplies, and assistance in their practices. Similarly, producers, importers and distributors of medicines and devices would benefit from improved technical advice and quality control over basic materials, and new legal protection of traditional knowledge associated with their products. Finally, the treasury may also expect some benefits as greater reliability and availability of locally grown materials reduces the pressure to import, and as royalties and duties increase through a more carefully monitored export and licensed market.

Preliminary Project Description

GOSL has identified, conceptually, an investment program covering about 4-5 years, as a vehicle for implementing its policy. The program follows from and builds on successful results of the

Conservation and Sustainable Use of Medicinal Plants Project (CSUMPP). Actions for implementing the policy would fall into 5 components:

i) Policy and Regulatory Reform: Support would be provided for advisors to assist in preparing a new legislative framework covering IM, and to update existing regulations within various sectors including forestry and trade, to correspond to the new policy. Other anomalies would be corrected as well. In addition, work would be completed to operationalize regulations covering the protection of intellectual property.

ii) Human Resource Development: Training of IM practitioners through the apprenticeship program ("guru-kula" system) initiated under CSUMPP would continue. Opportunities for in-service refresher training and independent staff learning would also be offered for researchers, producers, manufacturers and others associated with IM.

iii) Research and Development: Initiatives begun under the CSUMPP to determine the sustainable use of various medicinal plant species (sustainability studies), propagation methods, and *ex situ* plant production techniques would be continued under the responsibility of BMARI. Likewise, BMARI would continue maintaining and augmenting the medicinal plant database, including improving physical access through upgraded information technology and refining access and use criteria. BMARI would also perform quality control functions through a new laboratory. Lastly, the legal status and operational staffing of BMARI as an institution would be strengthened to perform its expanded role.

iv) Product Development and Marketing: While recognizing that the private sector has the principle role in the production and marketing of ayurvedic medicine and products, GOSL would improve the regulatory environment for the industry. Advisory services would be sought to assist in establishing product and production standards (quality, quantity, authenticity) in the public interest and in support of better trading opportunities. Resources would also be provided to facilitate the adoption of improvements in medicine production technology by the producers of plant materials, and of products, and market intelligence for producers.

v) Institution Development Supporting IM: Advisory services and operational support would be provided to continue development of "CAMCs" and their VPMCs, in new areas of the country, following the model of the "non-profit" business developed in the CSUMPP. These agencies have proven to be effective in mobilizing grass-roots self-help, and awareness and sensitivity to environmental issues related to IM. The existing and new CAMCs would be assisted in such mutually supporting activities as knowledge sharing, self development, formation of collective actions, by a new project office, to be formed within the Ministry of Indigenous Medicine. This office would provide assistance to individual CAMCs or to them collectively. The Ministry of Indigenous Medicine itself would be strengthened by the formation of a Planning, Monitoring and Evaluation Unit which would incorporate the project office as well as provide general planning functions for the ministry, and the management systems governing its provincial counterparts, clinics and hospitals. Several key organs of the MIM (for example, the BMARI and National Institute for Traditional Medicine (NITM)) would also be restructured, retrained and re-staffed.

The costs of the program are not currently detailed. However, based on the experience with the Conservation and Sustainable Use of Medicinal Plants Project, the activities identified may require US$10-12 million.

Management and Implementation Arrangements

The action program would be managed by the MIM through a project office in its newly formed Planning, Monitoring and Evaluation Unit. As tested under the CSUMPP, apart from guiding policy and regulatory reform which would be a role of the MIM, most actions would be implemented by partner agencies, under contracts and co-financing agreements with the MIM. In this manner, a sense of ownership of the policy and program would be maintained within BMARI, NITM, universities, provincial ministries responsible for IM, and other national ministries with specific capabilities related to IM.

The new program would be implemented with the full participation of stakeholders. The project office would conduct periodic participatory workshops for establishing annual work plans and evaluating results, using professional facilitators. Further, it would organize and facilitate technical workshops for the leadership of the CAMCs/VPMCs to support their mutual development.

Issues and Risks

One of the principal questions for GOSL will continue to be - the balancing of its attention and support, between the western and the indigenous health care and treatment traditions. While international organizations such as WHO recognize the complimentarily of these approaches to health maintenance, to date, the western tradition appears to have received bulk of the GOSL resources for health. By adopting a policy for IM, GOSL will be attempting to reach a balance between the two health care traditions and a combination of the elements of the two that may best serve in the circumstances faced by target populations (the rural poor, urban poor). The issue will remain whether stakeholders in western medical tradition will be willing to respect an inclusive policy.

Because it is “traditional”, IM has not received significant protections under intellectual property law, although GOSL appears ready to adopt a new Intellectual Property Rights law governing ayurvedic medicinal practices. However, applying regulations will present a significant governance challenge considering the potential commercial value of such information. Special attention will be required in the naming of administrators, and establishing accountability and transparency systems if information exchanges, apprenticeships, and other means of expanding the efficiency and efficacy of the sector if it is developed.

ADCD production and distribution is largely through the private sector, although with a substantial presence of the state ayurvedic medicine company. In its effort to stimulate demand and promote *ex situ* production of medicinal plants, and to sustain the new CAMCs in their start-up phase, GOSL has offered contracts by the state, for CAMC-produced materials, and local and provincial officials of the MIM have given preferences to these organizations. A private

sector producer of ADCDs has also entered into a contract with a CAMC for plant materials, although of a smaller volume. GOSL will require a clear position on the role of public ADCD production and preferential procurement to avoid dominating the market and frustrating the achievement of efficiency and competitiveness in the sector.

In launching a new support program, GOSL will also face two significant risks.

First, ambiguities in GOSL's past policy towards IM has resulted in frequent changes in ministerial affiliation and senior staffing of the sector. As a result, a professionalized managerial culture and lines of recognized authority have not been fully developed at the sectoral level. This has had a negative effect on the management of several important institutions as well (DOA, BMARI). To address these shortcomings, the proposed program recognizes the need to develop management skills and systems, however mitigating the risk will require a phased approach to implementation that favors capacity building ahead of investments in the institutions to be supported.

Second, by increasing quality and access to ADCDs, the demand for plant materials will also increase. Presently, much of the demand is being met through imports, which could continue with greater controls on quality. The CSUMPP has also begun to develop and introduce plant production technologies, although this has been limited so far to few species and mainly annual crops. The project envisages continuing research to address the problems of propagation and sustainable harvesting of naturally found materials. The risk remains, however, that once responsibilities for assuring the sustainable use of forest products is transferred to the Forestry Department, even if it is the best indicated authority, and with the advent of community forestry, specific interest on sustaining medicinal plants populations will diminish. MIM will have to maintain awareness-building activities to mitigate this risk.

Additional Annex 10. Borrower's Contribution

Conservation and Sustainable Use of Medicinal Plants Project
Implementation Completion Report - Borrower's Contribution

EXECUTIVE SUMMARY

The Sri Lanka Conservation and Sustainable use of Medicinal Plants Project valued at US$ 5.07 and time-scaled for 5 years was initiated in June 1998, and completed in June 2004 with an extra 12 months permitted to formalize transfer of Project activities to relevant institutions. The primary objectives of the Project were conserving globally and nationally significant medicinal plant species, their habitats and genomes, and promote their sustainable use. The Project sought to achieve these objectives by promoting a series of designed activities for *in-situ* and *ex-situ* conservation of medicinal plants, and through the provision of information and institutional support. The Project identified local communities comprising all shades of people living in proximity to five specially selected Medicinal Plant Conservation Areas (MPCAs) as the target population and the primary beneficiaries.

The institutional framework, in the conservation areas, comprised Village Project Management Committees, (VPMCs) at the village level, Conservation Area Management Committees (CAMCs) at the MPCA level, and the Project Offices (POs). The Project was co-ordinated by the Project Management Unit (PMU) appointed by the Ministry of Indigenous Medicine (MIM), and was implemented in collaboration with other partner agencies such as the Department of Auyrveda, the Forest Department (FD), the Department of Wildlife Conservation (DWLC), the relevant Provincial Councils and the Divisional Secretariats (DS). The Country Office of the World Conservation Union (IUCN) provided operational support.

The socio-economic survey, the ethno botanical survey and the resource inventory survey led to the collection of very valuable data. Despite a few shortcomings in the survey process, the data collected has been considered to be of good quality. The processed information from these data sets is now incorporated in a new database established at the Bandaranaike Memorial Ayurvedic Research Institute (BMARI) which is one of the important outputs of the Project.

The baseline data facilitated mapping of resources and demarcation of forest zones. It was also the source of information for village micro plans. Various consultancy studies however, have reported that a stereotype planning process had been applied in all VPMCs, resulting in the preparation of near identical micro plans. It is also reported that planning had been largely project-driven, depriving the community of the opportunity of gaining self-confidence and a sense of ownership of the village micro plans.

The main contributions of the Project to *in situ* conservation of medicinal plants were enrichment planting of about 205 hectares, 45 kilometers of stream bank planting, establishment of fire lines, zonal demarcation of forests and substitution of wood stakes used in bean cultivation with synthetic cord. The studies on sustainable levels of harvesting were limited to 5 species as time did not permit a wider coverage.

Another successful activity was the plant propagation research, which led to the development of protocols for mass production of planting material for 22 widely used species. The publication and dissemination of information on plant propagation procedures through techno-guides was another useful output. These studies have created a new interest in home-gardens, of which there are currently over 3000. Commercial cultivation by a few local entrepreneurs has also been a significant outcome of the research component of the Project. These activities while indirectly contributing to *in situ* conservation intensively strengthen *ex situ* conservation of medicinal plants.

The project has attempted to address the issue of Intellectual Property Rights (IPR). Although legislation on IPR was drafted and approved by a Cabinet sub committee it is yet to be enacted in Parliament. Nevertheless, around 1200 O*la* leaf manuscripts transcribed and published.

The education, training and extension activities met with unqualified success. The impact was at several levels on a continuing basis, and was probably the most significant and profitable exercise of the Project. Its outcomes, spin-offs and impacts involved 1) a country-wide awareness of the importance of conserving medicinal plants, 2) creation of a regiment of field staff including community members, well trained in social mobilization, data collection and analysis, documentation of field data etc, 3) creating a strong and effective gender awakening and empowerment rarely seen in rural communities, 4) creation of a clear understanding and awareness of participatory/joint forest management, 5) demonstration of opportunities for increased choices for better livelihood, as well as demonstrating greater efficiency and innovation in production of traditional medicine, and 6) reviving and expanding the system of *Gurukula* education that characterised knowledge transfer in *Deshiya Chikitsa,* the traditional system of medicine.

Finally, there was the major issue of transferring ownership and management of the assets and activities of the project-created organizations to the communities on the one hand, and for DoA to assume the responsibility of guiding, facilitating, sustaining and expanding the work of VPMCs and CAMCs, on the other. This process was initiated in 2002 and carried through during the one-year extension granted to the Project But the work is not over and there is more to be done. MIM is gearing itself for the task ahead.

The CAMCs are to be registered as non-profit making companies once the immovable assets are transferred. The MIM on the other hand has drawn up an action plan to ensure the continuation of activities that were to be the responsibility of the DoA, BMARI and NITM. This Action Plan has identified Policy, Human Resource Development, Research, Product Development and Institutional Approaches as the key components to carry forward the activities initiated under the Project. MIM has in addition done the ground work to carry forward the project activities by drafting a National Policy on Traditional Knowledge and a 5-year development plan to uplift the system of traditional medicine, and finally to back-stop the VPMC/CAMCs operations, an inter-ministerial committee and a National Forum with wide community representation are planned to be established shortly.