PROJECT EXECUTIVE SUMMARY

REQUEST FOR Council Work Program Inclusion
UNDER THE GEF Trust Fund

GEFSEC PROJECT ID: Not yet assigned
IA/EXA'S PROJECT ID: Not yet assigned
COUNTRIES: Global: Brazil, Ghana, India, Kenya, Nepal, Pakistan and South Africa
PROJECT TITLE: Conservation and Management of Pollinators for Sustainable Agriculture, through an Ecosystem Approach
GEF IA/EXA: UNEP/FAO
OTHER PROJECT EXECUTING AGENCY(IES): Brazil: Brazilian Ministry of the Environment; **Ghana**: University of Cape Coast; **India:** G.B. Pant Institute of Himalayan Environment and Development; **Kenya:** National Museums of Kenya; **Nepal:** Ministry of Agriculture and Cooperatives, Gender Equity and Environment Division; **Pakistan:** National Agricultural Research Centre; **South Africa:** South African National Biodiversity Institute; United Nations Food and Agriculture Organization (FAO), Rome, Italy
DURATION: 5 years
GEF FOCAL AREA: Biodiversity
GEF STRATEGIC OBJECTIVES: BD2
GEF OPERATIONAL PROGRAM: OP # 13
PIPELINE ENTRY DATE: 13 June 2003
EXPECTED STARTING DATE: January 2008
EXPECTED CEO ENDORSEMENT: NOVEMBER 2007
IA/EXA FEE: 9%

FINANCING PLAN ($)		
	PPG	**Project**
GEF Total	700,000	7,810,682
Co-financing	(provide details in Section b: Co-financing)	
GEF IA/ExA	377,000	1,241,095
Governments		16,390,129
Others – International organisations	568,000	1,016,097
Co-financing Total	945,000	18,647,321
Total	1,645,000	26,458,003
Financing for Associated Activities If Any: NA		

FOR JOINT PARTNERSHIP**		
GEF PROJECT/COMPONENT ($)		
	(Share)	(Fee)
(UNEP)	(100%)	(Fee)
(FAO)	(0)	(Fee)

** Projects that are jointly implemented by more than one IA or ExA

CONTRIBUTION TO KEY INDICATORS IDENTIFIED IN THE FOCAL AREA STRATEGIES:

- At least 495,000 ha of land under target cropping systems in the area surrounding STEP sites is managed with good agricultural practices for pollinator conservation and sustainable use by project end.
- 20% of farmers in more than 430 local communities in the area surrounding STEP sites improve crop production by 10% and crop quality through better conservation and management of pollination services by project end.

Approved on behalf of the United Nations Environmental Program. This proposal has been prepared in accordance with GEF policies and procedures and meets the standards of the GEF Project Review Criteria for work programme inclusion

IA/ExA Coordinator
Shafqat Kakakhel
Deputy Executive Director
Officer-in-Charge
Division of Global Environment Facility Coordination
United Nations Environment Programme
PO Box 30552 - 00100
Nairobi, Kenya

Project Contact Person:
Marieta Sakalian
UNEP/DGEF Programme Management/ Liaison Officer, Biodiversity
FAO Headquarters
TCAP Unit , D654
Viale Delle Terme di Caracalla
00153 Rome, Italy
E-mail 1: Marieta.Sakalian@unep.org

Date: April 26, 2007

1. PROJECT SUMMARY

a) Project rational, objectives, outcomes, and activities

Pollination is a keystone process in both human-managed and natural terrestrial ecosystems. It is critical for food production and human livelihoods. In agro-ecosystems, pollinators are essential for orchard, horticultural and forage production, as well as the production of seed for many root and fibre crops. Pollinators such as bees, birds and bats affect 35 percent of the world's crop production, increasing outputs of 87 of the leading food crops worldwide, plus many plant-derived medicines in our pharmacies.

Food security, food diversity, human nutrition and food prices all rely strongly on animal pollinators. This is particularly the case of horticultural crops. Diversification into horticultural crops is becoming an avenue to poverty alleviation amongst many farmers around the world. The trade in horticultural crops accounts for over 20% of developing countries' agricultural exports, more than double that of cereal crops. However, unlike the historical increase in cereal production, the expansion of production in fruits and vegetables has come primarily from increases in the area cropped, not from yield increases. The consequences of pollinator declines are likely to impact the production and costs of vitamin-rich crops like fruits and vegetables, leading to increasingly unbalanced diets and health problems. Thus, maintaining and increasing yields in horticultural crops under agricultural development is critically important to health, nutrition, food security and better farm incomes for poor farmers.

Nonetheless, pollination as a factor in food production and security is little understood and appreciated, in part because it has been provided by nature at no explicit cost to human communities. As farm fields have become larger, and the use of agricultural chemicals that impact beneficial insects such as pollinators along with plant pests has increased, mounting evidence points to a potentially serious decline in populations of pollinators under agricultural development. The domesticated honeybee, *Apis mellifera* (and its several Asian relatives) have been utilized to provide managed pollination systems, but for many crops, honeybees are either not effective or are suboptimal pollinators. The process of securing effective pollinators to "service" agricultural fields is proving difficult to engineer, and there is a renewed interest in helping nature provide pollination services.

With the threat of increased impacts on pollination services as agricultural systems are intensified, it is critical to identify, in multiple agro-ecosystems and ecologies, the practices that will prevent the loss of pollination services provided by wild indigenous pollinators. Because restoration is far more difficult than conservation of existing interactions, there are strong argument rationales to conserve wild and indigenous pollination services before they are lost. Examples of practices that farmers and land managers may implement include: simple low cost measures such as letting cover crops bloom before they are plowed into the soil (to enrich fertility); not disturbing sandy areas that provide nesting sites; and measures taken to maintain structurally diverse landscapes, such as planting hedgerows or conserving natural habitat. Yet there exists virtually no knowledge base about the specific needs and practices to support wild pollinators of crops, particularly in developing countries.

Management of wild pollination services requires an ecosystem approach with boundaries of the system drawn beyond fields, into the broader agroecosystem. For management at the landscape scale to be effective, multiple actors must cooperate to conserve habitat or improve their practices, so that the community benefits. Farming communities naturally form interactive social units that depend upon one another for various kinds of assistance (sharing equipment, transport, techniques). Thus,

although implementing positive practices for pollinators across an entire landscape is a challenge, working with farming communities means working with individuals who may already see the benefits of a common approach, particularly when it enhances the quantity, quality and stability of crop yields. Increasing the awareness of the vital but inconspicuous ecosystem service rendered by pollinators amongst rural communities is needed. In addition, identifying pollinator-friendly policy environments on local and national levels that recognize the need to manage resources at the landscape level, beyond the scale of individual land holdings will lead to more biodiversity-sensitive spatial planning.

Seven countries (Brazil, Ghana, India, Kenya, Nepal, Pakistan and South Africa) have worked together with FAO to identify activities that can address the threats to pollinators, and which will expand global understanding, capacity and awareness of the conservation and sustainable use of pollinators for agriculture. All the partner countries have important agricultural sectors with strong reliance on pollinator-dependent crops, and an existing commitment to building capacity and enabling environments for conserving and managing wild pollinators. The range of partner countries permits the project to include in its focus smallholder farms and large plantations; crops critical for food security and commodities important primarily in export markets; crops for which traditional knowledge contribute significantly to farmer practices, and crops that are grown according to the recommendations of agricultural research.

The countries participating in this project comprise a range of agro-ecosystems, socio-economic conditions and ecologies, which capture a broad diversity of systems where interventions to conserve pollinators can be both challenging and effective (see Figure 1). The countries include a range of ecosystems, from subtropical and tropical zones to montane areas to semi-arid regions. Cutting across these ecological zones is an equivalent diversity of agricultural systems, from transitional shifting cultivation, to smallholder agriculture, to intensive systems of cultivation. The diversity of participating countries will permit learning across ranges of agricultural intensification and sharing of experiences across the broader agroecosystems; for example, montane systems of cultivating mustard seed occur in an extensive region from Asia to Europe, all of which can benefit from project findings. All countries participating have perceived declines in pollination services to crops of economic importance (Annex F).

The *development objective* of the project is to achieve improved food security, nutrition and livelihoods through the enhanced conservation and sustainable use of pollinators. The project's *immediate objective* is to harness the benefits of pollination services provided by wild biodiversity for human livelihoods and sustainable agriculture, through an ecosystem approach in selected countries. The project seeks to promote awareness that not just species, but also the interactions between species merit conservation and careful management, as a way to strengthen key ecosystem linkages. It emphasises the importance of linkages between conservation of ecosystem functions, sustainable production systems, and poverty reduction.

Anticipated project outcomes are:

Outcome 1, An integrated and accessible knowledge base for management of wild pollination services, for farmers, land managers and policy makers. The project will integrate existing scientific and traditional knowledge on diverse aspects of pollination services into a cohesive source of information. This strengthened and consolidated knowledge base will be made accessible to practitioners in the field, with obvious benefits for conservation and sustainable use of pollination services.

Outcome 2, Enhanced conservation and sustainable use of pollinators for sustainable agriculture. The project will identify demonstrate and document the tools, methodologies, strategies and good agricultural practices that are needed for pollinator conservation and sustainable use, in selected agroecosystems in Brazil, Ghana, Kenya, India, Nepal, Pakistan and South Africa. These practices will be ones that can be effectively replicated in other parts of the world, throughout the broader agroecosystems that underpin the farming systems addressed in this project.

Outcome 3, Increased capacity for conservation and sustainable use of pollinators by farmers and land managers. The project will work to build local, national, regional and global capacities for the design and implementation of interventions to mitigate pollinator population declines, and establish sustainable pollinator management practices. In partner countries, capacity among farmers, the agricultural research and extension community, and policy-makers to design and implement pollination management plans and policies will be built.

Outcome 4, Mainstreaming of pollinator conservation and sustainable use. The project will ensure that the lessons learned are disseminated globally, that public awareness of the role and value of pollination services is enhanced and that measures to conserve and sustainably use pollinators are supported by the policy environment.

A complete list of project activities is presented in Annex B- Logical Framework and Work Plan.

(b) Key indicators, assumptions, and risks list the indicators and risks (from Logframe)

The following six impact indicators have been identified during the PDF B phase of the project by national partners from the seven countries:

- At least 495,000 hectares of land under target cropping systems in the area surrounding STEP sites is managed with good agricultural practices for pollinator conservation and sustainable use by project end.

- At least 20% of target farmers in 430 local communities in the area surrounding STEP sites improve crop production by 10% and crop quality through better conservation and management of pollination services by project end.

- Number of users of the expanded knowledge base on pollination will increase by 20% annually from its initial development to project end.

- At least 20% of farmers in the areas surrounding STEP sites will implement good agricultural practices to conserve and sustainably use pollination services by project end.

- Public awareness of pollination services increased by 15% in target groups around STEP sites through public awareness campaigns by project end.

- Policy recommendations that support and strengthen conservation and sustainable management of pollination services are developed, submitted to policy makers and incorporated in national strategy documents in at least two countries.

The project will produce a framework for the evaluating impact of farming practices on pollinator conservation and use, and their associated costs and benefits to farming communities. These evaluation tools will be made publicly accessible by year 4.

Attainment of these targets rests on the assumptions that political stability in project countries will be maintained such that biodiversity and pollinators can continue as government priorities, and that the target cropping systems remain important to local economies. It also assumes that the target publics can be interested in pollination issues, and that conservation of ecosystem services is relevant to the agenda of policymakers. The full list of indicators and assumptions against each of the outcomes and outputs has been described in Annex B-Logical Framework and Workplan.

2. COUNTRY OWNERSHIP

a) COUNTRY ELIGIBILITY

The requesting countries have all ratified the Convention on Biological Diversity: Brazil on 28 February 1994; Ghana on 29 August 1994; India on 18 February 1994; Kenya on 26 July 1994; Nepal on 23 November 1993; Pakistan on 26 July 1994; and South Africa on 2 November 1995.

b) COUNTRY DRIVENNESS

The seven partner countries (Brazil, Ghana, India, Kenya, Nepal, Pakistan and South Africa) have commitments to building capacity and enabling environments for conserving and managing wild pollinators, recognise the critical role of pollinators to sustainable agriculture, and have initiated activities to document and protect pollinators. Brazil along with several African partners has taken a lead in establishing a global intergovernmental initiative on pollinator conservation. Partners in Brazil have hosted three international meetings on pollinator conservation, and have formed a Brazilian Pollinator Initiative recognised by an interministerial government directive. Country partners have published two important volumes of papers on the status of pollinator conservation. The three partner countries in Africa have worked together to establish and lead an African Pollinator Initiative, with over sixty members in fifteen countries. They have produced a plan of action, a scientific publication and an initial stocktaking of pollinator conservation needs in Africa. Partners in Nepal, Pakistan and India have looked into the contribution of pollination to rural livelihoods in each of their countries, as a valuable input into the development of the activities in this proposal. Several participating countries specifically refer to pollinators in their National Biodiversity Strategies and Action Plans (India, Pakistan and South Africa); Kenya has included conservation of pollination services as part of its draft Biodiversity Regulations, and Nepal has incorporated a pollination program in its Biodiversity Implementation Plan, ensuring that pollination will be mainstreamed into biodiversity conservation measures.

3. PROGRAM AND POLICY CONFORMITY

a) FIT TO GEF FOCAL AREA STRATEGIC OBJECTIVES AND OPERATIONAL PROGRAM

The proposed project is consistent with the Strategic Objective 2 for GEF IV, and will significantly assist in achieving its aims to promote biodiversity in production landscapes, and to mainstream biodiversity into the agricultural sector. Specifically, an estimated 495,000 hectares of land in agricultural production landscapes will contribute to biodiversity conservation. In over 430 farming communities, incentive measures to conserve and sustainably use pollinators will be in place through improved livelihoods. Policy interventions that ensure that pollinator conservation considerations are included in spatial planning on local scales, to sustain such management systems, will be introduced within countries.

The United Nations Convention on Biological Diversity (CBD) multi-year program of activities on the conservation and sustainable use of agricultural biodiversity was adopted at the Third Meeting of the Conference of Parties to the Convention on Biological Diversity in 1996. This programme of

work recognizes that agricultural biodiversity is fundamental to issues of food security, and one of the important links is in the dependence of crops on a diverse variety of insect pollinators. The proposed project corresponds to the decision's definition of agricultural biodiversity as encompassing not only genetic resources, but biodiversity providing ecological services.

b) SUSTAINABILITY (INCLUDING FINANCIAL SUSTAINABILITY)

The specific outcomes of this project will not depend on continued intervention funding after the five-year project period; it is anticipated that pollinator-friendly management practices will have been effectively tested, demonstrated, evaluated and adopted and will become part of agricultural management practices in target communities. On the institutional level, it is not anticipated that new structures need to be built over the life of the project, but that capacity to use the tools and knowledge generated by this project needs to be in place to allow activities to continue. There are a number of outputs of the project that in themselves will assure that the capacity to manage pollination services is increased, both in project sites and beyond. A strong stress on training of trainers and multipliers will ensure that the capacity to understand and use crop pollination information is present in extension services, farmer associations and sustainable agriculture NGOs.

The functionality of the tools developed through this project and the web portal as a source of information for agricultural systems will depend upon their continued access and maintenance after project completion. Information generated by countries will be maintained in distributed databases, with data owners responsible for their continued maintenance and agreements in place regarding data access. Global information will be the responsibility of FAO. Providing agrobiodiversity information to enhance the knowledge base of sustainable agriculture systems, including management of pollination services in cropping systems, fits entirely with the mandate of FAO as an information provider, and it is envisaged that resources will be availed to update and maintain access to the global knowledge base and information management system after the life of the full-sized project. The pollinator interaction databases, to be developed by collaborative arrangements with data holders worldwide, will be maintained and updated by a system of distributed databases with data holders taking responsibility for updates and verification. Capacity building material will be consolidated in a distance learning program, and taken over by an institution that has maintenance of distance learning courses as its mandate. Policies to ensure the sustainability of specific interventions on a local level, such as protection of pollinator habitat, will be in place by project end, as this is an explicit outcome of STEP site management plan implementation, and will be addressed during STEP site development

Much of the sustainability of the outcomes of this project depend upon successfully increasing the level of awareness and understanding of the value of pollination services in the minds of farmers, communities and policy-makers. It is an underlying thesis of this project that sustainability of pollinator conservation will be assured so long as sufficient public awareness has been raised. Farmers and landowners will be motivated to undertake measures to conserve and promote pollination services because it is to their benefit to do so.

Project coordination will remain at the Food and Agriculture Organization of the United Nations, ensuring the international reach and professional management standards of the coordinating body. The project has been developed on the basis of several years of joint work between project partners; project sustainability is reinforced through the strong partnership that this international, collaborative effort has built. A global project to harness the benefits of pollination services with international, national and local interventions is considered highly effective to meet the current challenges of pollinator conservation. Efforts to conserve pollinators on the ground have often been challenged by

the taxonomic impediment and the lack of framework to understand impacts and values of pollinator populations in agroecosystems. Overcoming these challenges through development of a global knowledge base, framework and protocols for the design local management plans for pollination will provide tools that can be effectively applied throughout all project sites, and beyond.

C) REPLICABILITY

A key feature of the project is the development, improvement and testing of methods for assessing the status of pollinators and their services and evaluating the impact of improved management. This will establish a methodological base that will be more easily replicated in future work to conserve and manage pollination services than is presently possible. Principles and experiences developed through this project are expected to be readily upscaled throughout the agroecosystems underpinning the particular cropping systems that are addressed in the project. Guidance will be provided through project outputs on developing appropriate management for pollinators in the absence of data-intensive information and applying lessons learned in project sites to the overall agroecosystem. Dissemination of project outcomes will be through a comprehensive capacity-building component, development of training materials including distance learning, public awareness campaigns and printed and electronic publications and web portals.

D) STAKEHOLDER INVOLVEMENT

During the PDF-B phase, stakeholders have been identified in each country, and include farmer groups; land managers; extension agents; government ministries involved in agriculture, food security, biodiversity and poverty alleviation; the research community; NGOs involved in biodiversity conservation and sustainable agriculture; and private sector representatives. All key stakeholder groups have been represented by at least one representative in each national committee and have been consulted on the scope of the stock-taking, project design, country priorities and priority agro-ecosystems. Several stakeholder representatives participated in the stock-taking exercise in each country, contributing to the identification of gaps and alternatives used to design the full project. Stakeholders with capacity and interest for direct involvement have been identified and selected as national partners, to be involved in the implementation of the project. Many stakeholders wish to remain involved in the implementation phase, including their own contributions of funds and in-kind support. National coordinators will issue project updates on a biannual basis over the duration of the project to the stakeholders expressing an interest. Stakeholders will be invited for farmer field days in demonstration sites. Farmers growing pollinator-dependent crops will be a particular focus of targeted public awareness campaigns, and will be invited to become actively involved in farmer field trials through radio campaigns and extension information. Internationally, a wide range of stakeholders have been contacted and have indicated their interest in the outcome of the project. These include the coordinators of other regional initiatives carrying out similar activities in their regions; taxonomic experts willing to assist in the development of user-friendly identification tools; biodiversity information portals, such as the Global Biodiversity Information Facility (GBIF), that are interested in including project-generated data in their database systems; and pollination experts agreeing to serve as resource people. As project outcomes will have multiple global benefits, the involvement of international stakeholders is a high priority to ensure that the outcomes reach those they can best benefit.

e) MONITORING AND EVALUATION

The general and specific objectives of the project, and the list of its planned outputs, have provided the basis for a fully budgeted monitoring and evaluation plan (Annex S. M&E Plan). Approximately

US$690,000 from the total project budget will be allocated for monitoring and evaluation activities to be undertaken by project partners, independent experts and UNEP. US$ 220,000 of the costs of monitoring and evaluation are built on existing project activities, such as undertaking a comprehensive baseline survey of target groups in STEP sites, and developing participatory means of evaluation. The remaining $470,000 is reflected in project management component, including external reviews and meetings of the international steering committee and the technical advisory group.

Execution performance, tracking both programmatic progress and financial accountability will be carried out by UNEP, with support from the Project Management Unit (PMU). FAO and the PMU will be responsible for monitoring the technical execution of the project, based on the indicators and means of verifying them that are documented in the project logframe, and on the implementation timeframe. FAO's Department of Technical Cooperation and Division of Finance, with support from the Global Project Manager, will be responsible for developing biannual progress and quarterly financial reports respectively, with inputs from national management units. Biannual progress reports will include assessment of all outputs to be completed within that specific timeframe. These reports will be important monitoring tools, as they will be carefully tracked by both the National and International Steering Committees. These bodies will be responsible for assessing successes, ensuring that effective approaches are replicated to the extent possible, and that difficulties are addressed. When problems arise, members of the NSCs, ISC and the Technical Advisory Group are expected to help craft solutions and follow the result of their execution.

Participation of all stakeholders is fundamental to this project. Stakeholder participation in the M&E process is also essential to ensure their continued ownership in the project activities. The project expects to develop methods of evaluation in a participatory manner with stakeholders, and to involve stakeholders in subsequent evaluations and reviews of project performance. Mid-term and final evaluation will be conducted by independent evaluators contracted by UNEP.

4. FINANCING

A) PROJECT COSTS

Project Components/Outcomes	**Co-financing ($)**	***GEF ($)***	**Total ($)**
1. Integrated and accessible knowledge base	5,763,129	1,140,599	6,903,728
2. Enhanced conservation and sustainable use of pollinators	5,409,345	1,931,619	7,340,964
3. Increased capacity for conservation and sustainable use of pollinators	3,883,598	1,152,367	5,035,965
4. Mainstreaming of pollinator conservation and sustainable use	2,030,338	814,338	2,844,676
5. Project management			
Technical project coordination	514,298	1,973,709	2,488,007
Monitoring and Evaluation		470,000	470,000
Administration and M&E	1,046,613	328,050	1,374,663
Total project costs	**18,647,321**	**7,810,682**	**26,458,003**

B) PROJECT MANAGEMENT BUDGET/COST[1]

The project management component of this proposal includes costs for technical project coordination and management, monitoring and evaluation, and administrative costs. The budget below is for administrative costs.

	Estimated staff weeks	GEF	Other sources	Total
Personnel:				
Locally recruited personnel*	437	95,625	297,560	393,185
Internationally recruited personnel*	307	101,175	205,837	307,012
Office facilities, equipment, vehicles, communication		124,750	536,716	661,466
Travel		6,500	6,500	13,000
Totals		**328,050**	**1,046,613**	**1,374,663**

C) CONSULTANTS WORKING FOR TECHNICAL ASSISTANCE COMPONENTS:

Component	Estimated staff weeks	GEF ($)	Other sources	Project total(s)
Personnel	3120	720,000	2,120,115	2,840,115
Local consultants*	5950	2,260,108	1,968,520	4,228,628
International consultants	750	0	990,773	990,773
Total	**9820**	**2,980,108**	**5,079,408**	**8,059,516**

*Local consultants have been defined as all temporary and specialized personnel to be supported to assist national partners. This includes, for example, trainers and other capacity building personnel. Details on the area of expertise for the consultancies are provided in Annex V.

[1] See Annex V. Terms of Reference - Project personnel and Management Entities

D) CO-FINANCING SOURCES

Co-financing Sources				
Name of Co-financier (source)	**Classification**	**Type**	**Amount (US$)**	**Status**
FAO	Global Executing Agency Global Executing Agency/ extra budgetary	In-kind Cash	841,075 400,020	Financial stmt Financial stmt
Governments	National Executing Agency	In-kind Cash	8,195,970 8,194,159	Financial statement
Global Biodiversity Information Facility	International Partners	In-kind Cash	75,000 200,000	Financial statement
ICIPE	International Partner	In-kind Cash	225,000 267,000	Financial statement
IFAD	International Partner	Cash	200,000	Letter of intent
Others (IIED, Wren Media, University of California, Berkeley, USDA Bee Biology Lab, University of Bonn)		In-kind	49,097	Financial statement
Sub-Total Co-financing			**18,647,321**	

5. INSTITUTIONAL COORDINATION AND SUPPORT

a. CORE COMMITMENTS AND LINKAGES

International: One of the four main areas of intervention consistent with the United Nations Environment Programme's (UNEP) mandate in the GEF is "the identification and development of tools and methodologies for conservation and sustainable use of biodiversity". UNEP has developed a specific focus on the needs of agrobiodiversity conservation, recognizing the importance of biological diversity to the functioning of sustainable agroecosystems. The implementing agency supports projects that enhance awareness, knowledge and understanding of crop-associated biological diversity providing ecosystem services to sustainable agricultural production by the expansion of the knowledge base, demonstration of methods for conservation, sustainable management, raising of public awareness and promotion of mainstreaming biodiversity conservation in sectoral policies. The proposed project is consistent with the following areas of UNEP's mandate in the GEF, as identified in the UNEP Action Plan on Complementarity, approved by the May 1999 GEF council meeting:

- UNEP contributes to the ability of the GEF and of countries to make informed strategic and operational decisions on scientific and technical issues in programs and project design, implementation and evaluation, through scientific and technical analyses. These will include assessments, targeted research, methodology development and testing and structured programme learning projects.

- UNEP's projects promote regional and multi-country cooperation to achieve global environmental benefits, focusing on diagnostic analyses and cooperative mechanisms, and associated institutional strengthening.
- UNEP implements projects to promote specific technologies and demonstrate methodologies and policy tools that could be replicated on a larger scale by other partners.

The proposed project builds on FAO's lead international role in identifying actions to conserve agricultural biodiversity, recognising that many people's food and livelihood security depend on the sustained management of various biological resources that are important for food and agriculture. Most importantly, when the Fifth Conference of the Parties to the Convention Biological Diversity established an International Initiative for the Conservation and Sustainable Use of Pollinators (also known as the International Pollinators Initiative-IPI) in 2000 (COP decision V/5, section II), the CBD Executive Secretary was requested to "invite the Food and Agriculture Organization of the United Nations to facilitate and co-ordinate the Initiative in close co-operation with other relevant organisations." In November 2000, FAO organized a meeting with the participation of key experts to discuss how to elaborate the International Pollinators Initiative. Subsequently, a Plan of Action was prepared by FAO and the CBD secretariat; the Plan of Action of the IPI, as adopted at COP 6 (decision VI/5), provides the contextual background for this project proposal. The present proposal has been designed to be consistent with the four structural elements of the IPI plan of action (assessment, adaptive management, capacity building and mainstreaming), and to serve as means of achieving the objectives of the plan of action, both globally and in the partner countries.

As an intergovernmental body, FAO facilitates the promotion of sustainable agricultural practices (including the key role of pollination) to its member constituencies (such as Ministries of Agriculture) in different fora through its Committees such as the Committee on Agriculture, and its Commission on Genetic Resources for Food and Agriculture.

Regionally: In at least three regions of the world, regional pollinator initiatives have been formed and are building regional capacity in assessment and advocacy for pollinator management and conservation. The North American Pollinator Protection Campaign (NAPPC) brings together experts in academia, research, government agencies, agriculture, private industry, environmental groups and interested individuals from Mexico, Canada and the United States. The African Pollinator Initiative is an Africa-wide group of people committed to protecting, understanding and promoting the essential process of pollination for sustaining livelihoods and conserving biological diversity in Africa, which has been facilitated with support from the Food and Agriculture Organization of the United Nations (FAO). The European Pollinator Initiative was formed in response to growing evidence about local declines of pollinators in Europe, and a sense that the problem is more widespread. Regional pollinator initiatives provide important linkages for the proposed project, which facilitates a set of focused activities on assessment, adaptive management, capacity building and mainstreaming to be developed and carried out in a diverse set of developing countries that are similarly committed to pollinator conservation. With developing country involvement, information exchanges

and capacity building in different regions, pollinator conservation and management can yield global benefits, making strong links between human livelihood and biodiversity conservation.

Nationally: All seven partner countries have a clear commitment to reversing the losses of biodiversity in general and agricultural biodiversity and pollinators in particular, within their borders. In countries as diverse as Brazil, Ghana and Kenya, national pollinator initiatives have been established. Often these are led by national wild bee specialists, addressing scientific issues such as species systematics and distribution, community ecology of wild bees and plant-bee interactions. National partners have made appropriate linkages to a number of existing and planned projects of direct relevance to the proposed project. Brazil is an active participant in the WB/GEF project "Building the Inter-American Biodiversity Information Network" (IABIN) to improve the sharing of biodiversity information across national borders, with a pollinators network that will assist to disseminate the information and knowledge developed in the present project to the Inter-American region. The Ghanaian national coordinator, and the global coordinator, have developed linkages to the UNDP/GEF PDF-B project Conserving Globally Significant Biodiversity in Cocoa Production Landscapes in West Africa, which seeks to establish biodiversity- friendly cocoa production systems in Ghana through demonstration, scaling-up and market linkages. The Ghanaian national coordinator has attended planning meetings for this project, and it is foreseen that the two projects may work together on specific recommendations for enhancing wild pollination services to cocoa, and capacity building of farmers in the management of sustainable tree crop systems. The World Bank/GEF's National Biodiversity Project (PROBIO) in Brazil (1996-2005) issued a call in 2004 for proposals on the development of pilot pollination management plans for priority Brazilian crops dependent on pollination, and supported 13 such pilot management plans for one or more native pollinators of plants of economic importance, as demonstrations of sustainable use and restoration of pollinator diversity. These projects, most of which will have been completed at the time the present project commences, form a body of knowledge and an initial starting point in the development of management plans for pollination services that can advance the progress of project outputs in Brazil (and in similar ecosystems) by considerable time. The World Bank/GEF Conservation Farming Project, led by the South African National Biodiversity Institute (SANBI), has lent considerable experience to South African collaborators on the process of documenting ecosystem services; experience that will be shared amongst all project partners in the present project.

b. CONSULTATION, COORDINATION AND COLLABORATION BETWEEN IAS, AND IAS AND EXAS

UNEP has a long experience with coordinating and managing multi-country knowledge management and capacity building projects, and has strong linkages with the other relevant international organizations. UNEP will promote through its regional offices policy innovations within the partner countries that mainstream conservation and management of pollination services in spatial planning on local scales.

UNEP has worked closely with FAO on issues of agricultural biodiversity. Cooperation between UNEP and the Executing Agencies (national partners and FAO) and stakeholders at all levels has ensured that the project is in line with country priorities and recognition of farmers and land managers as the stewards of agricultural biodiversity. The International Steering Committee of the project met four times during the project development phase, and requested a special technical workshop with invited resource people from project countries and other collaborating institutions to produce a draft methodology for the development of demonstration sites. A number of international and research institutions have made commitments to continue advising the project on a technical level, including the Global Biodiversity Information Facility, the International Centre of Insect Physiology and Ecology, the International Institute of Environment and Development, Rothamsted Research (UK), Wren Media (UK), the Centre for Development Research, University of Bonn, University of California, Berkeley, and the Bee Biology Laboratory of the United States Department of Agriculture.

c. PROJECT IMPLEMENTATION ARRANGEMENT

Through national meetings of stakeholders and partners, and the meetings of the International Steering Committee management arrangements have been agreed upon in a participatory manner. The project will be executed by FAO, guided by an International Steering Committee (ISC) and supported by a Technical Advisory Group (TAG). The ISC will include one member from each partner country, a representative of UNEP/DGEF, a representative of FAO and the Global Project Coordinator (ex-officio). It will meet at least once a year and will remain in contact on key issues between meetings. The committee's secretary will be the Global Project Coordinator. The TAG will have responsibility for providing inputs and advice on the effective technical implementation of the outputs.

The national executing agencies will work in partnership with FAO in the execution of the project. In broad outline, each country will establish a National Steering Committee for monitoring and review of project implementation; a Technical Advisory Committee, for technical guidance; Site Teams charged with site planning and implementation; and a Project Activity Coordination Team which will link the different executing institutions in appropriate ways. In each country, the project will establish a national Project Management Unit (PMU) and will appoint a National Project Coordinator.

The project will establish a project management unit (PMU) and will appoint a Global Project Coordinator to ensure the smooth execution of the project. The Global Coordinator will attend meetings of the ISC and the TAG, will advise national executing institutions and Technical Advisory Committees in each country and will ensure the implementation of international-level activities. Technical and operations support to the project will be provided by relevant divisions and offices of FAO, including country, subregional and regional offices, and a project taskforce will be established to be consulted in the implementation of the project. The project will also benefit from the technical expertise of the FAO Interdepartmental Working Group on Biodiversity for

Food and Agriculture. Detailed project management and implementation arrangements at national and global level are described in Annex R.

ANNEX A: INCREMENTAL COST

BROAD DEVELOPMENT GOALS

As agricultural development intensifies, it has traditionally taken a toll on biodiversity and the environment, with simplified monocultures replacing complex ecosystems, and intensified use of agricultural chemicals that impact non-target, as well as target plants and animals. The ecosystem services that support agricultural productivity- including nutrient cycling, watershed functions and pollination- may themselves suffer from such practices, making agriculture ultimately unsustainable. Farming systems have long benefited from pollination services, but if the ability of the ecosystem to provide the service is not carefully maintained, pollinators may face local extinctions. The loss of biodiversity, in this case, is also a loss to sustainable production systems.

This proposed intervention aims to harness the benefits of pollination services provided by wild biodiversity for the mutual benefit of human livelihoods and biodiversity conservation. The project will integrate existing scientific and traditional knowledge on diverse aspects of pollination services into a cohesive source of information. This strengthened and consolidated knowledge base will be made accessible to practitioners in the field, with obvious benefits for conservation and sustainable use of pollination services. Good agricultural practices will be identified, tested and evaluated for pollinator conservation and sustainable use, in selected agro-ecosystems in seven partner countries. The practices so identified will be ones that can be effectively replicated in other parts of the world. In the partner countries, capacity among farmers, the agricultural research and extension community, and policy-makers to work together to design and implement pollination management plans and policies will be built. Last, the project will ensure that the lessons learned are disseminated globally, that public awareness of the role and value of pollination services is enhanced and that measures to conserve and sustainably use pollinators are supported by the policy environment. The result will be a set of tools, methodologies, strategies and best management practices and policies that can be applied to pollinator conservation efforts worldwide.

Global benefits of the project are (a) the conservation of globally significant pollinator diversity; (b) the conservation of associated biodiversity providing resources to pollinators, including associated floral resources and vegetation providing nesting sites in representative agro-ecosystems; (c) the development and dissemination of practices to conserve and manage wild pollination services that can be used both within and outside the project countries; (d) development of an expanded knowledge base and network of expertise on management of pollination services, made accessible globally; (e) provision of information on status and trends of pollinators in representative agroecosystems made available to policymakers (f) development of tools to valuate the costs and benefits of pollination services to human livelihoods and (g) concrete demonstrations of the principle that ecosystem services such as pollination sustain both agriculture and biodiversity conservation, and (h) introduction of innovative practices and policies to incorporate conservation of pollinators in spatial planning.

Domestic benefits of the project are (a) increased food supply of pollinator-dependent crops for local communities, (b) increased capacity to ensure that pollinators are not eliminated from local agricultural areas, (c) increased incentives for farmers to minimize the use of agricultural chemicals harmful to biodiversity.

BASELINE

All participating countries have the experience, infrastructure and personnel for building capacity of the farming community to adopt good agricultural practices. There are individuals and institutions within each country that have knowledge of pollination systems, although there is a lack of expertise in practical management techniques.

Several countries participating in this project are located in the known centers of biodiversity for pollinating species; Brazil is considered the center of diversity for stingless bees (Meliponini), South Africa has documented many highly unique pollination systems, and the Hindu-Kush region hosts a rich diversity of pollinators from both the Palearctic region and the Oriental region. Several countries are also in the center of origin of pollinator-dependent crops that provide food security and livelihoods for millions of farm families, such as coffee and cucurbits in Kenya. The pollination systems of crops in their center of origin can provide an enhanced understanding of the specific needs of these crops.

Most of the participating countries have developed National Biodiversity Strategies and Actions Plans, in response to their commitments as signatories to the United Nations Convention on Biological Diversity. Many of these plans address agricultural biodiversity and recognise its importance to sustainable livelihoods.

Over the last decade, there has been a strong mobilisation of the community of people and institutions concerned with pollinator losses, in many instances lead by the project partners. The actions needed to secure pollinator conservation for sustainable agriculture are well identified, but need investment to surmount the existing threats and barriers.

The project components have been designed to address the overall project baseline assumptions:

1. The existing knowledge base on pollinator conservation and management for sustainable agriculture is fragmented and largely inaccessible to pollination practioners in developing countries.
2. There is a lack of tested and carefully evaluated good agricultural practices to promote wild pollination services in farming systems.
3. There is insufficient capacity to develop management plans that conserve and promote pollination as an ecosystem service.
4. Insufficient awareness of pollination is reflected in the lack of a policy environment that facilitates and ensures the conservation of pollinators.

Expanded knowledge base

In each of the partner countries, there is a concern with the perceived losses of pollinators under agricultural development, although Brazil is the only country with a systematic program to monitor the status of endangered pollinators.

National agricultural research programs exist in all countries that focus on production limitations for key pollinator-dependent crops. While pollination is rarely included in such research programs, the existence of a knowledge base on other aspects of crop productivity provides a strong basis for addressing pollination needs.

Taxonomic expertise for the identification of bees exists in both South Africa and Brazil; in fact, these experts provide taxonomic assistance both globally and to their respective continents. But as pollination services are recognised for their value, there is an increasing dearth of local expertise to identify key pollinators.

The primary data about plant-pollinator relationships are embodied in, and vouchered by, specimens and their associated data in natural history collections, along with documented observations of plants and animals in nature. This material is dispersed throughout the world with different institutions/collections having very different qualities of storage and ease of retrieval of specimens and information. While the material has tremendous value for pollination practitioners, it is currently virtually impossible to use primary biodiversity data as a basis for decision-making and development of pollination management systems. The basic primary data, however, constitutes a substantial baseline cost.

Governments of several of the participating countries are ready to recognise ecosystem services, but lack well-verified figures for assessing the contribution of such services to the domestic economy.

The baseline cost for this project component is estimated to be $768,100. These costs include existing taxonomic services, monitoring efforts in Brazil, and on-going support to pollination research in several countries (South Africa, Pakistan, Kenya and India) that for the most part focuses on management of domestic species such as the honeybee. This baseline reflects cash expenditures by national governments and other donors, in-kind contributions of national partners in terms of salaries and infrastructure, and the on-going costs of existing information management for biodiversity.

Extension and promotion of pollinator-friendly good agricultural practices

The partner countries all depend heavily on agricultural production for domestic revenues, from providing more than one-third of domestic revenues in Brazil (equivalent to 180 billion USD) to almost forty percent in Nepal. As such, each country makes a substantial investment in their agricultural sector and the promotion of practices to ensure sustained productivity.

Efforts to reduce the overuse of agricultural chemicals have been underway in all partner countries. In many instances, farmers have been working with extension workers and

researchers to identify practices that reduce losses to pests and disease through ecosystem approaches, such as increasing habitat for beneficial insects on-farm.

There are existing programmes in several partner countries to manage the pollination needs of key crops, almost entirely through the use of domesticated honeybees. This often includes substantial expenditures on the part of farmers.

The baseline cost for this project component is estimated to be $1,918,404, based on on-going project-related activities which include development of the agriculture sector and targeted initiatives for pollinator-dependent crops, programmes in Integrated Pest Management, and honeybee research and management.

Capacity building

This project's ultimate impact will be on the capacity of farmers, land managers and decision makers to incorporate pollination considerations in their work. The importance of developing good agricultural practices in a participatory manner with target groups is central to project success.

The project countries recognize the importance of building the capacity of these target groups, and invest in extension and outreach activities in the regions that the project will be working. They also provide secondary and tertiary educational systems that in some cases educate students on pollination services, or could be modified to cover subjects that will build capacity in the conservation and management of pollinators. There is thus educational programs and infrastructure that forms a baseline for training programs for the management of pollination services. In addition, a considerable number of personnel in project countries have been trained in farmer group facilitation and farmer field school methods.

The baseline for this project component is $ 758,500. This estimate is based on the costs of existing capacity building personnel and training programmes that provide a starting point for project activities, including IPM and Farmer Field Schools, farmer association training programmes, and extension activities. This also includes the investment in teaching and research programmes for degree studies at national universities that will provide a framework for investigations in demonstrations sites.

Public awareness, mainstreaming and information-sharing.

There are some initiatives and public programmes, within most of the project countries, to increase the level of public understanding and appreciation of biodiversity; increasingly, this includes not just charismatic large animals, but also the many small organisms providing ecosystem services. The existence of various public awareness programmes, such as regular radio programmes for farmers, provides a venue for enhancing the public's understanding of the importance of pollinators.

Each of the partner countries have developed domestic policies and legislation addressing needs for sound agricultural policies, as well as biodiversity conservation. Food security

is an important feature of the poverty reduction strategies of several of the participating countries. There are, however, rarely policy links between the agricultural sector and the biodiversity sector, even if there are synergies and means by which one supports the other.

The costs of disseminating information are decreasing, and the reach of networks for electronic dissemination are increasing quickly in partner countries as Internet becomes more common. With electronic publishing, there is a greater ease of using color photographs and graphics that can greatly assist to convey complex topics in accessible terms. But there is a lack of locally useful material, developed with local communities as a target population.

The estimated baseline cost of this component is $ 969,000. This estimate is a based on the costs of current public awareness campaigns and programmes that can incorporate coverage of pollination, and existing initiatives to develop legislation and policies to conserve biodiversity and promote sustainable agriculture.

GLOBAL ENVIRONMENTAL OBJECTIVES

The project will conserve biodiversity in project sites that provides a critical ecosystem service and benefit to food security and food quality. Integrated systems of ensuring crop production while conserving on-farm biodiversity will be identified tested and promoted. The systems to be promoted will be resource-conserving and less toxic to biodiversity than conventional farming systems. Thus, there should be reduced environmental contamination for pro-pollinator production systems. Additional global biodiversity benefits that will accrue through the application of this approach will include other crop-related biodiversity such as beneficial insects and soil organisms. Pro-pollinator systems focus on the benefit of additional aspects of biodiversity, such as floral associates of pollinators in addition to crops, and vegetation that provides nesting sites. In a general sense, the practices to be identified and promoted through this project will conserve a greater diversity of species- in particular of plants, insects, and microfauna- in agricultural areas, recognising that such diversity is beneficial to the health and sustainability of production landscapes. In this sense, the conservation of wild biodiversity in cropping systems will be recognised for its value and conserved.

GEF ALTERNATIVE

The project will develop a set of tools and databases of great utility to pollination practitioners around the world to understand crop pollination needs and to identify and conserve effective pollinators. Conservation of biodiversity in farming landscapes will become a method for ensuring stability and sustainable production, and an incentive to reduce the use of agricultural chemicals.

Expanded knowledge base

An integrated information management system for conservation and management of pollination services will be developed that will be useful to project partners and others concerned with crop pollination globally. The information system will make the literature

base on priority crop pollination information easily accessible and searchable by crop, pollinator and associated biodiversity. Tools and networks will be established to permit accurate, replicable information on the status and trends of pollinators in key cropping systems, providing information from developing countries that is an outstanding gap in global monitoring. The project will make important contributions to the understanding of pollination deficits and landscape management of pollination. It will develop tools and protocols for the economic valuation of pollination services that can be used in different cropping systems and will provide the global community with a means of evaluating market and non-market values of this ecosystem service. The project will facilitate the development of accurate, complete and authoritative databases from natural history collections on pollinator interactions that will profoundly change accessibility to such data and make it useful to field practitioners.

The incremental cost of this project component is estimated to be US$ 6,903,728 of which national governments will provide co-financing of US$ 3,091,331 (in-kind) and US $ 1,825,375 (cash) to cover salaries of staff participation and use of facilities for activities in Component 1 including: database development, data basing of literature, undertaking field surveys for monitoring, assessing plant pollination limitations and gathering information for the evaluation of market and non-market values of pollination services, vehicle use for surveys, processing and maintenance of insect specimens, staff costing via cash co-funding and organising the logistical arrangements for undertaking these surveys. International co-financing estimated at $41,936 in in-kind logistical support and $90,000 cash support from FAO for technical assistance and project coordination will support the development of a pollination bibliographic system and effective search facility, establishment of a monitoring program on status and trends of pollination services for indicator cropping systems, the production of protocols, tools and increased understanding of plant pollination limitation, landscape management of pollination services and valuation of pollination services, the development of tools to identify pollinators, and the development of the global Pollination Information Management System. $75,000 in-kind and $200,000 cash from the Global Biodiversity Information Facility will support the development of plant pollinator interaction databases; $150,000 in kind and $150,000 cash from ICIPE will contribute technical support in developing agroecosystem management systems for pollinators; $100,000 cash from IFAD will support the development of means of valuating pollination services, and $39,487 in-kind support will contribute technical advice from the Center for Development Research at the University of Bonn, University of California, Berkeley, and the Bee Biology Laboratory of the United States Department of Agriculture. GEF funds from national allocations under GEF-4 totalling $1,140,599 will enable participating countries to build and consolidate their national knowledge base, develop procedures for monitoring pollinators and determining crop pollination deficits, identify landscape level interventions for pollinator conservation and contribute to the development of the Pollination Information Management System.

Extension and promotion of pollinator-friendly good agricultural practices

Farming communities, land managers and national partners will together gather information on pollination needs in priority cropping systems, and design management

plans that document the benefits of wild pollination services, indicate pollinator-friendly good agricultural practices, and promote the value of these practices in farming systems. Specialised tools for management of ecosystems services over landscapes, using participatory mapping activities, will be developed. Surveys of good agricultural practices from a diversity of farming communities and ecosystems will be compiled and made available, and means of evaluating agricultural practices for their effectiveness in conserving pollination services will be developed and disseminated. The lessons learned for communities, land managers and policy makers in developing explicit management plans for pollination services will be highlighted for local communities, and general guidelines extracted from these experiences for the global community.

The incremental cost of this project component is US$ 7,340,964 of which national governments will provide co-financing of US$ 2,115,523 (in-kind) and US2,991,886 (cash) to cover contribution of personnel for the staff time, rental cost of STEP sites; infrastructure for GIS facilities; field and laboratory costs, use of laboratory facilities, time commitments from policy makers, farmers and managers in developing, implementing and evaluating management plans, farmers' contributions of access to land and logistical arrangements associated with operating demonstration sites. Co-financing at US$ 41,936 (in-kind) and US$ 260,000 (cash) will be provided by UN FAO and IFAD to compile global surveys of good practices, provide scientific backstopping in the development of management plans, develop and disseminate evaluation tools to systematically assessing the impacts of practices on pollinators respecting a diversity of success criteria from local to global benefits and costs, and translating lessons learned into general guidance for farm communities. The GEF funds of US$ 1,931,619 from national allocations will be used for the development, testing and evaluation of management plans in each partner country, and dissemination of lessons learned.

Capacity building

Capacity to use the expanded knowledge base on pollination developed through Component One and the pollinator-friendly good agricultural practices identified, tested and documented in Component Two, will be built on multiple levels. Trainers such as extension agents and other multipliers and the farmers they work with will develop capacity to develop, use and apply pollinator management plans. Training activities will permit farmers and farming communities to assess and incorporate pollination conservation measures in the context of sustainable agricultural systems, including the wider dimensions of marketing and incentives for provisioning of environmental services. Capacities will also be built in farmer organisations, NGOs, educational institutes, members of the media and policymakers. In countries where farmer practices are best modified through scientific research and demonstration, student projects will be used to build skills in the scientific community that can provide sound evidence to farmers. Needs in capacity building will be continually reassessed, and appropriate training materials to answer such needs will be developed.

The incremental cost of this project component is US$ 5,035,965 of which national governments will provide co-financing of US$ 1,717,436 (in-kind) and US 1,932,226 (cash). National funds will cover staff time of personnel trained in capacity building,

internships, support for post graduate students, training facilities, training on parataxonomist knowledge, staff time of experts in capacity building; meeting partial expenditure of farmers training; logistic support for conducting activities of component 4, including some local travel costs, and time contributions from institutes, universities and colleges. FAO and other international partners, including collaboration with the ARPPIS programme run by the International Centre of Insect Physiology and Ecology in Kenya will be providing US$ 116,936 in in-kind support and US$ 117,000 cash, to support technical assistance in the implementation of capacity building programmes, and developing distance learning programmes and other tools to build skills in the management of wild pollination services. The GEF funds of US$ 1,152,367 from national allocations will be used development of training materials, training of multipliers, and in costs associated with specialised training courses, for personnel in existing organisations, and for taxonomic training.

Public awareness, mainstreaming and information-sharing.

The project outcomes will be sustained through various measures to ensure that project outcomes are adopted beyond physical demonstration sites and trained personnel. Project findings will be promoted in public awareness campaigns, targeted to key audiences. Polices will be identified that promote conservation and wise management of pollination services, as a means of replicating good agricultural practices in multiple locations. The dissemination of all project information, from the information management system, to lessons learned in STEP sites, to capacity building material, means of raising public awareness and pro-pollinator policy analysis, will ensure that project outcomes are shared on a global level, and can serve to secure the global benefits of conserving pollination services.

The incremental cost for this project component is US$ 2,844,676. National governments will contribute US$ 564,120 in in-kind contributions, and US$ 1,414,672 cash contributions. National funds will be used for staff time on public awareness assessments and campaigns, preparation of awareness raising material, staff time for policy development and environmental education, for local participation in the pollinator policy workshops, and in logistical support for these activities. On an international level, FAO, the International Institute of Environment and Development and Wren Media will contribute $51,546 in kind for activities serving to bring increased awareness of pollination services into global venues of policymakers, to provide technical backstopping in the formulation of pro-pollinator policies, and to ensure sharing and dissemination of project outcomes on an international level. The GEF funds of US$ 814,338 from national allocations will be used for implementing public awareness campaigns in partner countries, and translating and disseminating project outcomes to the global community.

Project Management

The incremental cost of the project management component is estimated at US$ 4,332,670 The funds requested from GEF of US$ 771,759 for this component on a national level will support National Project Management Units, which include a full time

National Project Manager or Coordinator in each country, and direct administrative costs. $2,000,000 of GEF funds will be applied towards the costs of a full time global project coordinator, global coordinator's travel, International Steering Committee meetings, and Technical Advisory Group meetings and missions, technical coordination, global outcomes delivery and information dissemination, internal monitoring and evaluation and midterm and final external evaluations of the project as per the budget described in the Monitoring and Evaluation plan (Annex S). FAO will contribute US$ 673,331 in kind and US$ 150,020 cash to project management, including logistical and administrative backstopping, office space and supplies. National Project coordination mechanisms, including national steering committee meetings, are covered by national in-kind and cash contributions, as well as office and workshop facilities, meeting space, office equipment, salaries of staff assisting with the project, partial internet costs, administrative, secretarial, IT and logistical support. Total contribution of national governments and organisations for this component is US$ 707,560 (in-kind) and US$ 30,000 cash.

COSTS

The incremental costs and benefits of the proposed project are summarized in the following incremental cost matrix. Baseline expenditures amount to US$ 4,414,004, while the alternative has been estimated at $ 30,872,007. The incremental cost of the project, US$ 26,458,003 is required to achieve the project's global environmental objectives of which the amount of US$ 7,810,682 is requested from GEF. This amounts to 25.0 % of the total costs of the alternative. The remaining amount, US$ 23,061,325 (representing 75.0 % of the total alternative cost of the Full Project), will come the in-kind and cash contributions from the national and international partners and other donors, in addition to the baseline.

TABLE 1: COSTS AND INCREMENTAL ANALYSIS

	Baseline (B)	**Alternative (A)**	**Increment (A-B)**
Global Benefits	• Lack of knowledge to conserve and manage wild pollination services, • Means to ensure sustainability of agricultural production through biodiversity are lost. • Desirable levels of fruit and seed production and quality not realised. • No systematic efforts to catalogue effective pollinators and their resource needs. **Baseline: US$4,414,004**	• Conservation of globally significant pollinator diversity. • Conservation of associated biodiversity providing resources to pollinators: associated floral resources and nesting sites. • Development of practices to conserve and manage wild pollination services that can be used both within and outside the project countries. • Economic and non-economic values of biodiversity in agricultural landscapes is understood. **Alternative US$30,872,007**	**Increment: US$ 26,458,003**
Domestic Benefits	• Decreased crop production when crops are grown under pollinator-unfriendly systems. • Increased use of hand-pollination and reliance on managed honeybees, with attendant risks of pests and diseases in managed bee systems. • Farmer knowledge of good agricultural practices supporting pollination services is not documented.	• Increased food supply of pollinator-dependent crops for local communities. • Increased capacity to ensure that pollinators are not eliminated from local agricultural areas. • Increased incentives for farmers to minimize the use of agricultural chemicals harmful to biodiversity.	

Outcome 1: **Integrated and accessible knowledge base for management of wild pollination services, for farmers, land managers and policy makers**	• Pollination not understood as an agricultural input • Status and trends of pollinators remains undocumented • Ecological knowledge in specimen data about pollinators is inaccessible and unused • Pollination services not included in valuations of biodiversity and land management Brazil $100,000 Ghana $71,500 India $170,000 Kenya $47,600 Nepal $80,000 Pakistan $4,000 South Africa $155,000 Global $140,000 **Total: $768,100**	• Integrated information systems, based on expert knowledge of pollination management developed and accessible to the global community • Status and trends of pollinators documented in diverse agroecosystems. • Landscape management of pollination services understood. • Tools for pollinator identification developed and used. • Ecological knowledge captured over centuries in museum data made accessible and useful. • Pollination services included in valuations of biodiversity and land management. Brazil $5,235,326 Ghana $285,982 India $386,726 Kenya $164,090 Nepal $191,149 Pakistan $142,328 South Africa $456,498 Global $809,729 **Total $7,671,828**	Brazil $5,135,326 Ghana $214,482 India $216,726 Kenya $116,490 Nepal $111,149 Pakistan $138,328 South Africa $301,498 Global $669,729 **Total: $6,903,728** **Co-finance:$5,763,129** **Cost to GEF:$1,140,599**
Outcome 2: **Enhanced conservation and sustainable use of pollinators**	• Pollination not managed as an agricultural input • Sustainability and reliability of agricultural production of pollinator-dependent crops is undermined. • Existing farmer practices that are pollinator-friendly are not promoted.	• Best practices to conserve and manage wild pollination services documented. • Pollination management plans for priority cropping systems developed, tested, and evaluated. • Lessons shared with local communities. Generalised guidelines on development of pollination management plans developed for	

	Brazil $1,357,804 Ghana $5,000 India $123,000 Kenya $29,600 Nepal $164,000 Pakistan $9,000 South Africa $100,000 Global $130,000 **Total: $1,918,404**	Brazil $7,067,169 Ghana $347,220 India $389,617 Kenya $232,130 Nepal $287,895 Pakistan $137,199 South Africa $582,896 Global $215,242 Total: **$9,259,368**	Brazil $5,709,365 Ghana $342,220 India $266,617 Kenya $202,530 Nepal $123,895 Pakistan $128,199 South Africa $482,896 Global $85,242 **Total: $7,340,964** **Co-finance: $5,409,345** **Cost to GEF:$1,931,619**
Outcome 3: **Increased capacity for conservation and sustainable use of pollinators**	• Training to manage wild pollination services for pollinator-dependent crops is not available. • Training material on management of pollination services not available. • No local expertise in identification of pollinators. Brazil $100,000 Ghana $80,500 India $337,000 Kenya $71,000 Nepal $0 Pakistan $0 South Africa $50,000 Global $120,000 **Total: $758,500**	• Trainers and multipliers have capacity to guide farmers and land managers in the development of pollination management plans. • Stakeholders trained in areas of expertise needed for roles in conserving and managing pollinators for sustainable agriculture. • Training material of management of wild pollination services is available. Brazil $3,886,720 Ghana $330,268 India $521,573 Kenya $188,239 Nepal $110,380 Pakistan $204,457 South Africa $235,586 Global $317,242 **Total: $5,794,465**	Brazil $3,786,720 Ghana $249,768 India $184,573 Kenya $117,239 Nepal $110,380 Pakistan $204,457 South Africa $185,586 Global $197,242 **Total: $5,035,965** **Co-finance: $ 3,883,598** **Cost to GEF:$1,152,367**

Outcome 4: **Enhanced awareness of conservation and sustainable use of pollinators for the general public and for policymakers**	• Public and policy makers remain unaware of the value of pollination services. • Polices do not consider means of conserving and promoting pollination services for sustainable agriculture. • Information base on pollination is not accessible Brazil $500,000 Ghana $6,500 India $202,000 Kenya $46,500 Nepal $0 Pakistan $0 South Africa $0 Global $214,000 **Total: $969,000**	• Public awareness and appreciation of pollination services is enhanced. • Policy briefs developed that identify appropriate policy measures to conserve and manage wild pollination services for sustainable agriculture • Information exchange and mainstreaming of good agricultural practices for pollination management, through national and regional workshops. • Knowledge base on pollination disseminated and accessible. Brazil $2,731,749 Ghana $172,756 India $298,252 Kenya $160,450 Nepal $50,302 Pakistan $107,819 South Africa $63,496 Global $228,852 **Total: $3,813,676**	Brazil $2,231,749 Ghana $166,256 India $96,252 Kenya $113,950 Nepal $50,302 Pakistan $107,819 South Africa $63,496 Global $14,852 **Total: $2,844,676** **Co-finance: $2,030,338** **Cost to GEF: $814,338**
Project management		• Effective national and global collaboration to produce the project outputs with active stakeholder participation and systems of monitoring and evaluation that strengthen programme implementation.	Brazil $873,802 Ghana $65,242 India $33,742 Kenya $96,001 Nepal $58,742 Pakistan $185,242 South Africa $233,242 Global $2,786,657 **Total: $4,332,670** **Co-finance: $1,560,911** **Cost to GEF:$2,771,759**

ANNEX B: LOGICAL FRAMEWORK AND WORKPLAN

Table 1. Project Planning Matrix (PPM)	**Project title: "Conservation and Management of Pollinators for Sustainable Agriculture, Through an Ecosystem Approach"**	**Date: 20.03.2007**	**Page 1**

Objectives and outcomes	Objectively verifiable indicators	Means of verification	Important assumptions
Development objective: **Improved food security, nutrition and livelihood through enhanced conservation and sustainable use of pollinators**	• At least 495,000 ha of land under target cropping systems in the area surrounding STEP sites is managed with good agricultural practices for pollinator conservation and sustainable use by project end. • 20% of farmers in more than 430 local communities in the area surrounding STEP sites improve crop production by 10% and crop quality through better conservation and management of pollination services by project end.	• Land-use and farmer practice survey, at beginning and end of project;	• Political stability (biodiversity and pollinators still priority) • Priority crops remain important to local economies.
Immediate objective: **Benefits of pollination services provided by wild biodiversity harnested for human livelihoods and sustainable agriculture, through an ecosystem approach in selected countries**	• Number of users of the expanded knowledge base on pollination will increase by 20% annually from time of initial development ot project end. • At least 20% of farmers in the area surrounding STEP sites will implement good agricultural practices to conserve and sustainably use pollination services by project end. • Public awareness of pollination services increased by 15% in target groups around STEP sites through public awareness campaigns by project end. • Policy recommendations that support and strengthen conservation and sustainable management of pollination services are developed, submitted to policy makers and incorporated in national strategy documents in at	• User statistics • Land-use and farmer practice survey, at beginning and end of project. • Public awareness survey at beginning and end of project. • National policy papers, and project reports.	• Financial support is available for full project activities. • Capacity building and awareness raising are utilized. • The public is interested in pollination issues. • Conservation of ecosystem services is relevant to the agenda of policymakers.

	least two countries by project end.		
Outcome 1: **Integrated and accessible knowledge base for management of wild pollination services, for farmers, land managers and policy makers**	• Practices to conserve and sustainably use wild pollinators and address crop pollination deficits are incorporated in at least two pollinator-dependent crop management plans in STEP sites in at least four partner countries by end of third year, and each year afterwards. • Socio economic valuations of pollination services are available for at least one agroecosystem per country and outcomes findings are transmitted to and considered by policy makers by end of fourth year. • 50% of key pollinators for three target crops per country can be identified within each partner country by end of second year. • Pollination information management system is annually accessed by 3000 users, from time of initial development to end of project.	• Project reports and publications on monitoring results. • Project reports and publications on economic assessment. • Project reports and publications on plant pollination deficits. • Project reports and publications of identification guides. • User statistics, project reports and publications.	• Analytical methods are robust for handling pollinator data. • Local communities and scientific communities collaborate with the project and share knowledge. • Economic methods adequately capture ecosystem service valuation. • Existing tools for developing user-friendly guides are adaptable to pollinators. • Databases are accessible.
Output 1.1 An expanded knowledge base and tools accessible to pollination practitioners	• Pollination bibliographic database compiled and made accessible by end of first year. • Pollination thesaurus developed, used in AGROVOC and as search utility for bibliographic database by end of first year. • Monitoring program on indicator systems of pollinator status established and implemented by end of second year. • Pollinator interaction databases compiled at end of third year, with yearly updates thereafter. • Pollination Information Management System	• Distributed database available, on national and global levels. • Project reports and publications. • Pollination Information	• Scientific experts cooperate with the project. • Communities are receptive to monitoring programs • Extensionists and multipliers are

	developed and made accessible to the public at end of third year.	Management System • Project reports and publications	interested in using tools developed to manage pollination systems.
Output 1.2 Guidelines and publications on plant pollination limitations, agroecosystem management of pollination services, and socio-economic valuation of pollination.	• Guidelines on detection of plant pollination limitations established, by end of third year. • Guidelines on identifying and sustaining pollinator effectiveness and availability in agricultural landscapes, by end of fourth year. • Economic assessments of the value of pollination services published, one for each country, by end of fourth year.	• Guidelines and publications	• Scientific experts cooperate with the project.
Output 1.3 User-friendly tools for pollinator identification.	• Laminated field guides to effective pollinators produced at end of second year. • User-friendly identification guides published for bee genera on regional grouping at end of fifth year.	• Project reports and identification guides.	• Scientific experts cooperate with the project.
Outcome 2: ***Enhanced conservation and sustainable use of pollinators***	• Practices that conserve and enhance pollinator populations are adopted on at least 20% of land area under target cropping systems in the area surrounding STEP sites by end of project. • 20% of farmers in the area surrounding STEP sites using good pollination practices have 10% increases in crop yields and measurable improvements in crop quality by end of project.	• Project reports and publications that include evaluations of STEP site progress • Project reports and publications that include survey of best practices	• No natural calamities cancel the benefits of pollinator conservation • Local communities and scientific communities collaborate with the project and share knowledge • Pollinator friendly policies and incentives are accepted as part of management plans by policymakers and farmers
Output 2.1 Development and testing of pollinator-friendly management plans	• At least two pollinator-friendly management practices developed and tested in management plans for one priority cropping system in each country by end of fourth year.	• Project reports and publications	• Farmers are receptive and interested. • Extensionists and multipliers are interested in working with communities and partners to

			develop pollination management plans.
Output 2.2 Documentation of practices and tools for evaluation and development of management plans	• Global survey of good pollination practices completed, at end second year. • Publication of evaluation tools for demonstration sites at end of second year. • Publication of results of evaluations of management interventions in demonstration sites, and description of local-level good agricultural practices, at end of fifth year. • Manual produced on the development of pollinator management plans at end of project.	• Survey results • Guidelines and publications	• Commitment of project partners remains strong
Outcome 3: **Increased capacity for conservation and sustainable use of pollinators for farmers and land managers.**	• At least 20% of the farmers of the project site regions introduce good agricultural practices to conserve and manage wild pollination services on their farms by end of project. • In at least one STEP site per country, at least two local area decision making meetings have been held, with participation by farmers trained through the project, to address and improve landscape-level practices to conserve pollination services by end of project.	• Project reports on capacity building • Surveys at beginning and end of project.	• Target groups motivated to participate and make use of capacity.
Output 3.1 Enhanced capacity of farmers and multipliers to conserve and use wild pollination services	• Published training material for farmer groups produced by end of fourth year. • At least one participatory research training program/farmers group in support of pollination management developed in five countries by end of year three.	• Needs assessment results • Project reports and publications • Training material	• Multipliers and farmers are receptive and interested

Output 3.2 Enhanced research capacity for management of pollination services	• At least two post-graduate students trained in pollination management for sustainable agriculture by end of year four.	• Project reports and publications.	• Scientific experts cooperate with the project.
Output 3.3 Tools for building capacity in management of pollination services	• Distance learning course developed by end of year four. • Roster of experts in pollination management developed and made available by end of year three.	• Distance learning course • Roster	• Scientific experts cooperate with the project. • Multipliers are receptive and interested.
Outcome 4: **Mainstreaming of pollinator conservation and sustainable use**	• Levels of public awareness, as determined by survey at project beginning and project end, are increased by 15% by end of project. • Policy recommendations that support and strengthen conservation and sustainable management of pollination services are developed, submitted to policy makers and incorporated in national strategy documents in at least two countries by project end.	• Project reports and publications; news monitoring reports • News monitoring reports, project reports and publications on policy matters	• Media interested in pollination issues. • Policy-makers interested in pollination issues.
Output 4.1 Campaign for increased public awareness of the role of pollinators	• Survey of public awareness completed at project beginning and end, showing significant increase in public awareness	• Survey results	• Public is receptive and interested.
Output 4.2 National dialogue on pro-pollinator policy	• Four national policy workshops organised by end of year four • Policy recommendations formulated and submitted to policy makers in all countries by end of year five.	• National policy papers • Project reports and publications	• Policy-makers perceive pollination as relevant and valuable to their constituencies.

Output 4.3 Information portals on national and global levels	• Information disseminated through web portal is accessed by 20% over each year of the project.	• Web-based information portal	• Extensionists and multipliers are interested in gathering information for working with communities and partners to develop pollination management plans.

Activities and time table by Outcome	**Project: "Conservation and Management of Pollinators for Sustainable Agriculture, Through an Ecosystem Approach"**				
Component 1. Expansion of the Knowledge Base	**Planning period:** September 2007 –August 2012			**ANNEX B**	
Activities Sub-activities	Timeframe Years				
	1	**2**	**3**	**4**	**5**
1.1. Update literature review and database design; development of thesaurus					
1.1a. Develop common platform for literature databases. *(completed in PDF phase)*					
1.1b. Develop means of archiving literature and ensuring access.					
1.1c. Develop a common pollination thesaurus.					
1.1d. Complete databasing of pollination literature. *(begun in pdf phase)*					
1.1e. Maintain literature databases on annual basis/monthly.					
1.1f. For articles relevant to Study, Training, Evaluation and Promotion (STEP) site agroecosystems, obtain or create abstracts of all articles, and select keywords, and archive					
1.1g. Carry out literature analyses/reviews on selected topics relevant to development of STEP sites (Plant reproductive biology and pollination, known pollinators in specific agro-ecosystems, cropping system and pollinators, pollinator decline/pollen limitation, implication of change land use and pollination systems) to be presented in PIMS, webportal.					
1.2 Refine methods and carry out monitoring of pollinator declines/deficits as a contribution to a global assessment of the State of the World's Pollinators					
1.2a. Identify survey methodologies, including intensive and rapid assessment methods, and for non-bee pollinators *(begun in pdf phase)*					
1.2b. Test survey methodologies *(begun in pdf phase)*					
1.2c. Collaborations developed/reinforced with other continental assessments for harmonization and sharing/ Agree on methods amongst partners and other collaborators					
1.2d. Carry out surveys; intensive in Study, Training, Evaluation and Promotion (STEP) sites, rapid assessments as proscribed in survey protocol.					
1.2e. Document results, pooling information into common database to be presented in PIMS, webportal.					
1.2f. Document procedures, publish manuals on standard methods.					
1.3 Extend knowledge base of plant pollination services and detection of pollen deficits					
1.3a. Survey of existing knowledge (begun in pdf phase)					
1.3b. Identify priority crops dependent on pollinators for which pollen limitation questions are critical. *(begun in pdf phase)*					
13c. Identify experts able to contribute to discussion and publication on detection, rapid assessment and treatment of plant pollination deficits in sustainable agriculture.					

1.4c. Covene expert e-mail discussion on needs and gaps in knowledge, scope of publication.					
1.4e. Commission papers on detection and treatment of plant pollination deficits					
1.4f. Convene authors' workshop, to peer review papers.					
1.4g. Edit papers for technical publication, design, layout and publish.					
1.4h. Edit key findings into a publication for a broader target audience of extension workers, agricultural schools, non governmental organisations.					
1.4 Extend knowledge base on interactions between agro-ecosystems and pollination management.					
1.4a. Develop research agendas for investigations of priority cropping agroecosystems and interactions with pollination management, including identifying threats/benefits of different agro-ecosystems to pollinators, assessing contribution of natural ecosystems, and considering the impact of spatial and temporal features of agro-ecosystem structure and practices on pollinators. *(begun in pdf phase)*					
1.4b. Recruit post graduate students able to address research questions on areas identified in 1.5a in Study, Training, Evaluation and Promotion (STEP) sites.					
1.4c. Carry out targeted research on areas identified in 1.5a in STEP sites.					
1.4d. Convene workshop of practitioners, researchers and advisors to present results and synthesize findings.					
1.4e. Edit papers for technical publication, design, layout and publish.					
1.4f. Edit key findings into a publication for a broader target audience of extension workers, agricultural schools, non governmental organisations.					
1.5 Extend knowledge base on assessing the socio-economic value of pollination					
1.5a. Develop robust framework of valuation of pollination as an ecosystem service, with indications of how cropping systems specificities can best be handled *(begun in pdf phase).*					
1.5b. Develop protocols for collection of information, including community participation. *(begun in pdf phase).*					
1.5c. Gather needed information and assess the actual and potential economic and subsistence or cultural values of pollination to crops, and the contribution of managed and wild pollinators to these values.					
1.5d. Convene workshop of practitioners, users, researchers and advisors to present results and synthesize findings.					
1.5e. Edit papers for technical publication, design, layout and publish.					
1.5f. Edit key findings into a publication for a broader target audience of extension workers, agricultural schools, non governmental organisations, to raise awareness of pollination as an input of production.					
1.6 Develop tools and networks for pollinator identification.					
1.6a. Establish a network of taxonomic services for key pollinator groups (bees, flies and beetles) in Study, Training, Evaluation and Promotion (STEP) sites, and rapid assessment sites.					
1.6b. With technical oversight by taxonomic advisors, develop simple laminated field guides to key pollinators of Study, Training, Evaluation and Promotion (STEP) sites.					
1.6c. Develop user-friendly identification keys to pollinator genera, by region and publish on internet and CD.					
1.7 Develop Pollination Interaction Database					

1.7a. Collect relevant information on expertise, crop pollination needs, effectiveness of pollinators, distribution of pollinators, alternative forage resources, nesting sites, dispersal ability, inter-specific competition, parasitism and predation impacts, impacts of alien species, known pesticide susceptibility, plant gene flow dynamics and reproductive biology, economic valuation of pollination services, from literature, museum collections, existing databases.					
1.7b. Clean and verify data.					
1.7c. Develop effective interaction database (plant-pollinator-agroecosystem); in depth for target cropping systems, in outline for crops for which information is scarce.					
1.7d. Use database to flag gaps in knowledge, document gaps and publish a review of state of knowledge.					
1.8 Development of a decision-support system to integrate information on pollinator landscape management: Pollinator Information Management System.					
1.8a. Develop integrated information management system, integrating the bibliographic database, identification tools, and interaction databases developed through activities above, with a user interface. Modules to be first developed will include Organism modules, Interaction modules, the Descriptive database, the Expert database and the Bibliographic database.					
1.8b. Standardise terms to be used in descriptive database, and interaction terms					
1.8c. Populate with data, for each Study, Training, Evaluation and Promotion (STEP) site agroecosystem: Organism modules, Interaction modules, Descriptive database, Expert database and Bibliographic database.					
1.8d. Enable and verify the capacity of the integrated information system to provide responses with respect to a simplified set of management questions, for area and crop or pollinator specific queries, based on the Study, Training, Evaluation and Promotion (STEP) sites.					
1.8e. Make PIMS available in training opportunities in STEP sites, and modify the interface according to user feeback, including linkages to the Guide to Pollination Knowledge Management (activity 4.5)					
1.8f. Develop further modules for Pollination Information Management System, including Collection management tools and database (or link to GBIF portal), Weather service, Location module, Ecosystem module, GIS or topographic module.					
1.8g. Populate the additional modules with data, for those STEP sites where there is adequate information.)					
1.8h. Enable and verify the capacity of the integrated information system to provide responses with respect to a complex set of management questions, for area and crop or pollinator specific queries, based on the Study, Training, Evaluation and Promotion (STEP) sites.					
1.8i. Make the complete PIMS available in training opportunities in STEP sites, and modify the interface according to user feedback.					
1.8i. Convene a workshop of practioners and experts to review and verify the operation of the PIMS (and to develop a set of decision-tree rules).					
1.8j. Make PIMS available to a wider public, through a web portal					

Activities and time table by Outcome	**Project: "Conservation and Management of Pollinators for Sustainable Agriculture, Through an Ecosystem Approach"**				
Component 2. Promotion of Pollinator-friendly Best Management Practices	**Planning period:** September 2007 –August 2012		**ANNEX B**		
Activities Sub-activities	Timeframe Years				
	1	**2**	**3**	**4**	**5**
2.1 Develop in a participatory manner and implement Study, Training, Evaluation and Promotion (STEP) sites management plans					
2.1a. Develop protocols/common set of data to be gathered as inputs to management plans, including consultation with community *(begun in pdf phase)*					
2.1b. Collect data in STEP sites					
2.1c. Develop management plans, in a participatory manner, testing specific recommendations/interventions					
2.1d. Implement management plans with participatory approach (staff time, transport, labour costs, leasing costs, GIS technologies).					
2.2 Further survey of pollinator-friendly agricultural practices, including case studies					
2.2a. Define survey protocols					
2.2b. Continue to call for case studies of pollinator-friendly agricultural practices including traditional and community knowledge, with a particular emphasis on those used in the agroecosystems of STEP sites.					
2.2c. Develop and implement broader survey of potentially useful practices by means of questionnaire.					
2.2c. Compile pollinator-friendly agricultural practices and make available to project partners and the public.					
2.3 Evaluate experiences and draw lessons learned from deploying pollinator-friendly agricultural practices in STEP sites					
2.3a. Document costs, benefits, and non-monetary values of pollinator friendly agricultural practices tested in STEP sites.					
2.3b. Develop participatory methods of evaluation of practices and solicit feedback from community.					
2.3d. Carry out evaluations of effectiveness and ease of use of specific recommendations to conserve and manage wild pollinators, involving farmers, researchers and development professionals.					
2.4 Publish lessons learned in STEP sites					
2.4a. Document the evaluation of and success with STEP site management plans					
2.4b. Make results of evaluations available to project partners and the public in case study format.					
2.4c. Translate lessons learned into more general guidance to local farming communities					
2.5 Translate lessons learned into more general guidance to local farming communities.					
2.5a. Identify network of applied pollination experts, for systems other than targeted cropping systems addressed in STEP sites.					

2.5b. Circulate STEP findings to network and convene e-mail discussion on drawing generalized conclusions, applicable to other farming systems.					
2.5c. Commission papers to elaborate on common findings and generalized conclusions.					
2.5d. Convene authors workshop, to peer review papers.					
2.5e. Edit papers for technical publication, design, layout and publish.					

Activities and time table by Outcome	**Project: "Conservation and Management of Pollinators for Sustainable Agriculture, Through an Ecosystem Approach"**				
Component 3. Capacity building for Conservation and Management of Pollination Services	**Planning period:** September 2007 –August 2012		**ANNEX B**		
Activities Sub-activities	Timeframe Years				
	1	**2**	**3**	**4**	**5**
3.1 Elaborate, carry out further needs assessment					
3.1a. Develop modalities for assessing capacity building gaps (*begun in PDF period).*					
3.1b. Assess and prioritize capacity building gaps					
3.1c. Identify specific subject matters for which trainers will need training: economic assessment methods, plant pollination limitation detection, development of pro-pollinator policy, etc.					
3.2 Review, adapt and develop training material for target clients; make material available					
3.2a. Continue updating the global and national review of capacity building material and making it available (*begun in PDF period)* .					
3.2b. Identify existing material that can be built upon (*begun/completed in PDF period).*					
3.2c. Develop both basic and specialised manuals and training modules building on existing material.					
3.2d. Publish manuals on CD, including translation for material to be shared globally.					
3.3 Provide training to farmers and to multipliers (TOT) at different levels.					
3.3a. Organize, advertise and coordinate training of trainers on specialized topics, in STEP sites.					
3.3c. Organize, advertise and coordinate training for farming communities in STEP sites.					
3.3b. Evaluate effectiveness of training.					
3.4 Provide training in existing organizations					
3.4a. Identify opportunities for training in existing venues (environmental education centers, botanical gardens, yearly agricultural exhibitions, school clubs and gardens).					
3.4b. Organise, advertise and coordinate training in existing venues					
3.4c. Develop information material and activities for diverse receptive groups					
3.4d. Evaluate effectiveness of training					
3.5 Provide training at formal school level					
3.5a. Identify opportunities for introducing pollination into curriculum (*begun/completed in PDF period).*					
3.5b. Develop and prepare education material for inclusion in diverse curriculum/teaching material (different school levels, existing classes, field trip opportunities)					
3.5c. Develop collaborative research agreements with appropriate university personnel/technical schools to support					

research agendas in STEP sites.					
3.6 Provide training on taxonomic knowledge					
3.6a. Develop training material for parataxonomic training.					
3.6b. Organise, advertise and coordinate training in existing organizations/venues.					
3.6c. Evaluate effectiveness of training.					
3.7 Provide distance training					
3.7a. Identify opportunities to convert training material into aids for distance learning.					
3.7b. Identify venues for hosting distance learning .					
3.7c. Develop distance learning training courses.					
3.7d. Make distance training courses available and advertise.					
3.7e. Assist and guide distance learners.					
3.7f. Evaluate effectiveness of training.					
3.8 Develop roster of experts for capacity building, sharing of expertise					
3.8a. Identify areas of expertise needed in pollination services management and conservation, and experts in the relevant areas.					
3.8b. Develop terms of engagement for experts in a capacity building network, and determine the willingness of experts to contribute.					
3.8c. Develop roster of experts and interface for accessing through project web portal.					

Activities and time table by Outcome	**Project: "Conservation and Management of Pollinators for Sustainable Agriculture, Through an Ecosystem Approach"**	
Component 4. Public Awareness, Mainstreaming and Information-sharing	**Planning period:** September 2007 –August 2012	**ANNEX B**

Activities Sub-activities	Timeframe Years				
	1	**2**	**3**	**4**	**5**
4.1 Further Assess levels of public awareness					
4.1a. Develop a professional public awareness survey approach to gauging levels of public awareness, based on PDF experience, applicable in all partner countries					
4.1b. Disseminate public awareness survey approach to survey specialists in partner countries, through workshop					
4.1c. Carry out country assessments of public awareness, twice, at beginning and end of project					
4.2 Raise public awareness for pollinator conservation and sustainable use					
4.2a. Refine public awareness strategies with targets of multipliers (trainers, extensionists, teacher, farmer associations, consumer associations, policymakers, at national and global levels) (*begun in PDF period)*					
4.2b. Implement public awareness strategies					
4.3 Support development of national pro-pollinator policies					
4.3a. Refine analysis of enabling policy environments, on national level. Document and analyse new developments in policies, legislation, and economic instruments that impact on pollinator conservation and sustainable use. Review successes and failures in mainstreaming (*begun in PDF period).*					
4.3b. Organise, advertise and convene stakeholder meetings and field days on STEP sites.					
4.3c. Organise events to sensitise policy makers.					
4.3d. Commission draft national policy paper on pollination, including legislative and voluntary measures.					
4.3e. Convene national pollinator policy workshop.					
4.3f. Publish and publicise report of workshop.					
4.4 Support development of supra-national pro-pollinator policies					
4.4a. Refine analysis of enabling policy environments, on global level. Document and analyse new developments in policies, legislation, economic instruments and intergovernmental agreements that impact on pollinator conservation and sustainable use. Review successes and failures in mainstreaming (*begun in PDF period).*					
4.4b. Support the development of incentive programs and voluntary measures.					
4.5 Dissemination of information, including translations					
4.5a. Develop and produce Generalised Guide to Pollination Knowledge Management: Refine from project outputs suitable material to be disseminated globally, and target audiences (global consulation) , with a focus on a simplifed,					

easily-read guide to managing pollination services, making the best use of pollination knowledge, increasing awareness and understanding of the ecosystem approach in the process, drawing examples from STEP sites but showing how the lessons learnt are of wide applicability.					
4.5b. Identify effective means of dissemination.					
4.5c. Establish an information-sharing network of information generators and recipients.					
4.5c. Translate material as needed; in particular, translation of simplified guide and publication abstracts into French, Spanish and Arabic.					
4.5d. Publish and disseminate material.					
4.6 Maintenance of web portal					
4.6a. Identify content and functionality of webportals (*begun in PDF period with IT report).*					
4.6b. Establish commitments for sustainability of websites after project completion.					
4.6b. Develop webportals and link national portals with global.					
4.6c. Maintain and update webportals.					

Activities and time table by Outcome	**Project: "Conservation and Management of Pollinators for Sustainable Agriculture, Through an Ecosystem Approach"**				
Component 5. Project Management	**Planning period:** September 2007 –August 2012		**ANNEX B**		
Activities Sub-activities	Timeframe Years				
	1	**2**	**3**	**4**	**5**
5.1 Arrangements for overall project administration and implementation					
5.1a. Hire global project coordinator.					
5.1b. Hire project personnel in partner countries.					
5.1c. Establish and equip national project offices.					
5.1d. Establish national steering committees in each partner country.					
5.2 Establish and operate project reporting and accounting system.					
5.3 Prepare work plans for project personnel in partner countries.					
5.4 International Steering Committee Meetings					
5.5 National Steering Committee Meetings					
5.6 Project monitoring and evaluation					

ANNEX C: STAP ROSTER TECHNICAL REVIEW

"Conservation and management of Pollinators for Sustainable Agriculture through an Ecosystem Approach"

Summary and Recommendation.

This project addresses a group of organisms that has been sadly neglected by both biodiversity and agricultural scientists. Yet this group, the invertebrate and vertebrate pollinators, performs a function that is essential to the maintenance of the life cycle of a huge fraction of terrestrial plant species, including a great variety of arable, horticultural or plantation crops. The project seeks to increase awareness and knowledge of these organisms and the services they perform, improve methods for their study, investigate trends in pollinator populations under stress from agriculture, identify best management practices, establish guidelines for their conservation and management in agricultural landscapes and increase the capacities of a wide range of stakeholders.

This is an excellent project on a crucially important topic and should be funded by GEF at the level sought. The proposal is very well written with a wealth of information in the annexes, which already goes some way towards achieving one of its aims, that of collating the currently scattered sources of knowledge. The objective and proposed four outcomes are attainable. A number of areas where problems in project management or implementation may occurr are pointed out and some suggestions made for modification to the Brief to improve its clarity and the visibility of its stated aims. These are given in italics below.

Introduction and General Issues.

Whilst there is a significant minority of the world's plants that are wind or self pollinating the majority rely on the transfer of pollen by invertebrate or vertebrate animals The pollination function is thus one that is crucial to the completion of vegetational life cycles and thence to the maintenance of ecosystem integrity and the existence of *all* biodiversity in the majority of terrestrial ecosystems including a large variety of agro-ecosystems. It is this sector of biodiversity that is addressed in this proposal. Many agricultural practices have negative impacts on pollinators and pollination. The pollinators are a diverse group at the species level; the project has selected to focus on pollination systems in a range of tropical cropping systems which include many important vegetable and fruit crops. This serves the dual purposes both of carrying out work of global significance on a key component of world biodiversity whilst concentrating on a geographical sector which has been neglected in comparison with the temperate regions.

The objective given to the project is 'enhanced understanding, conservation and sustainable use of pollinators through an ecosystem approach in selected countries for sustainable agriculture' (para 72). Whilst this is certainly descriptive of the programme of work that is proposed it could be said that the previous sentence in the same paragraph ('the project seeks to harness the benefits of pollination services provided by wild

biodiversity for the mutual benefit of human livelihoods and biodiversity conservation') is more expressive of the intentions and benefits which this project embraces.
The authors should give some thought to re-wording the project objective for greater impact.

The proposal lays out a programme of work targeted at four Outcomes (para 73).
Outcome 1. Expanded knowledge of pollination services for farmers, land managers and policy makers.
Outcome 2. Enhanced conservation and sustainable use of pollinators for sustainable agriculture.
Outcome 3. Increased capacity for conservation and sustainable use of pollinators by farmers and land managers.
Outcome 4. Mainstreaming of pollinator conservation and sustainable use.

These are later, and somewhat confusingly described, together with 'Project management', as the *five components* of the project (para 78).

This is an unnecessary elaboration. The Outcomes should stand alone as a group and Project Management be dealt with separately.

As detailed below further work should also be done to ensure that the Outcome statements adequately reflect the intentions and richness of the work programme they describe. Whilst this may seem simply a semantic issue the Outcome statements (as well as the objective referred to above) will be the first and perhaps the only description of the project that many will read and refer to. As presently worded these do not do the project justice.

Key issues

1. Scientific and technical soundness of the project
The scientific and technical issues are addressed in the first two of the Project Outcomes.

Outcome 1.
The work on the knowledge base is very well thought through and the sections of the Brief and the associated Annexes describing this component are well articulated, action-orientated and targeted at a series of clearly defined outputs.

The first of Output, a 'Pollination Bibliographic Database' will be a compendium of existing knowledge on pollinators, their ecology and the services they provide in agriculture (fully described in Annex I). This compilation will be greatly facilitated by a considerable body of work already done by project participants and advisers. It is to be expected that this will be an enormously valuable tool. Whilst there is a substantial body of information on pollination services in tropical agro-ecosystems this is very scattered, often inaccessible other than locally and much of it has not been subjected to quality assessment. This Bibliography will provide an invaluable base-tool for global work on the management of pollination as well as for the preparation of training materials.

Use of the bibliography will be facilitated by the associated development of a search tool based on the idea of a 'pollination thesaurus'.

Useful though this bibliography of current literature may be the main target of the project is to improve the knowledge base. This entails a variety of initiatives detailed under this Outcome and Outcome 2. But beyond improved data the project has taken on the ambitious task of attempting to provide an integrated framework for the study and management of this key functional group. Components of this framework include methods for assessing and monitoring trends in pollinator populations and services (Annexes J and K) which is crucial baseline of information on relationships between agricultural practices and pollination services against which any future actions must be judged; a network for taxonomic identification of pollinators bringing together international experts; a database on pollinator ecology which will provide important information on their significance both for management in agricultural systems and in the landscapes in which they are embedded; and methods for economic valuation of pollination services (Annex L). This last is ambitious but extremely important; experience shows how difficult it is to establish the importance of organisms or the functions they provide unless some kind of cash value can be attributed to them. The data and knowledge distilled from all the documentary research will be included in an international Pollination Management Information System.

This wealth of documentary outputs from the work under Outcome 1 should provide a synthesis of information knowledge and above all understanding of the biology of pollinators in tropical agricultural landscapes which will advance global capacity to manage, conserve and legislate for this key group of organisms.

The wording of this outcome does not adequately convey either the breadth or depth of the knowledge enhancement which it is intended to provide, and consideration should be give to re-wording the statement to emphasise issues of availability and access to knowledge as well as indicating that the stakeholder relevance is wider than farmers and land managers.

Outcome 2

A body of work is proposed to obtain new knowledge and insights into 'Good Agricultural Practices' with respect to the management of pollinators in order to reduce the negative effects of current practices and achieve impacts in terms of increased productivity which can be attributed to improved management of pollination services. The expected end-of -project impacts of this work are very clearly laid out in the Impact Statement in paragraph 80 and the authors are to be commended for their transparency in this respect. This work will largely be conducted at the demonstration sites that have been established in the seven participating countries. Detailed descriptions of the sites and of the criteria and steps used in their selection are given in Annex O, from which it is clear that this was a very thorough and participatory process.

Outcome 2 is thus targeted at using a combination of current scientific knowledge (the synthesis from Outcome 1) together with present realities of farm management to develop

'best practices' for pollinators and their services at an ecosystem scale. Unfortunately this key component of work is not as clearly described in the Brief as is that of Outcome 1. The authors state unequivocally in paragraph 94 that 'the actions that will need to be taken to conserve and manage pollinators are not completely known and will need to be developed in an adaptive manner'. This is thence a challenging but absolutely important piece of work. The approach appears to centre round a 'survey of good agricultural practice' but little detail is given in the one paragraph (96) of the Brief devoted to this. There is also, despite the level of detailed information on the sites in Annexes O and G, a surprising lack of discussion of the potential (or indeed currently observed) relationships between the level of intensification in agricultural management in the various sites and the potential impact on the pollination services. There is however much detail in Annex K - including a list of potentially important practices (eg. closeness to wild habitat, availability of resources etc)and a list of questions which will provide a basis for this survey – and additional relevant material in Annex G, which indicates that these issues of both concept and methodology have been identified, discussed and planned for during the preparatory process.

The authors can improve the Brief by using in a summarised form some of the material from the Annexes to strengthen the paragraphs in the Brief so that a clearer view is given of both conceptual framework and the field activities that will be undertaken. The provision of one or a few hypotheses on the relationships between management practices and pollination services might also be undertaken.

2. Identification of the global environmental benefits

The crucial importance of the pollinators to the function of terrestrial ecosystems has already been emphasised in the opening paragraphs of this review. Yet this functional group, and its constituent species, has been largely ignored in biodiversity studies.

The project will serve the global community first of all by increasing awareness of the need to include study of pollinators and pollination services in biodiversity inventories and monitoring programmes. Beyond this it will provide documentary and methodological tools that will enable and enhance the monitoring and management of pollinators world-wide.

A basic principle of the project is that study of the biology of pollinators only makes sense at an ecosystem or landscape scale. This focus is entirely consistent with the principles and strategies of the CBD and GEF. More importantly it should lead to a better appreciation of the need to manage wild habitat in agricultural landscapes.

Improved appreciation of the importance of pollinators goes beyond inventory and documentation however. There are very substantial economic incentives for ensuring that pollination services are optimized in a wide range of arable, horticultural and plantation crops world-wide, as well as in the critical 'hot-spot' biodiversity centres that have been identified across the globe.

The fourth Outcome of the project addresses issues to do with the mainstreaming of knowledge and information on the management of pollinators as key components of global biodiversity ie: Outcome 4. Mainstreaming of pollinator conservation and sustainable use.

This wording is again inadequate; the intended outcome is surely that knowledge (and recommendations?) regarding pollinators and their services are mainstreamed with the impact of improving conservation and sustainable management of this component of biodiversity?

3. Goals and operational strategies of GEF

The project is entirely consistent with the goals and operational priorities of GEF. At a specific level it clearly targets a key component of the diversity of Operational Programme 13, 'Conservation and sustainable use of biological diversity important to agriculture'. It responds very clearly to the strategic requirements of addressing both the intrinsic value of biodiversity and also the value of diversity in providing services to humanity. It addresses the impacts of human activities on biodiversity and its functions and it strongly promotes international cooperation in biodiversity actions.

The project goes beyond the scope of OP13 in that the principles and methods that will be developed will be applicable to 'natural' ecosystems world-wide, and in particular by drawing attention to the need to give better attention to the management of the invaluable resource constituted by the 'islands' of wild habitat in agricultural landscapes.

4. Global context.

The global context addressed in the project is all agricultural landscapes where cropping systems dependent on bio-pollination are located. Whilst this excludes the huge tracts in the northern hemisphere which are solely devoted to wind-pollinated grasses or sterile cereal crops it is nonetheless a truly global distribution. Indeed the issues addressed in the project further call into question the wisdom of biologically homogeneous landscapes typified by industrialized cereal production.

Bio-pollination is a crucial step in the maintenance of the majority of vegetation types in all terrestrial biomes, including a great variety of cropping systems. The first output of the project will ensure that the knowledge needed to manage and conserve pollinators is more widely available and accessible across the globe, particularly through the proposed Pollination Information Management System. The new knowledge to be generated on best management practices for pollination services will be derived from a range of sites across seven countries in the tropics. This will both serve to plug current gaps in the global datasets and also provide additional insights that should be globally applicable.

5. Replicability

A key feature of the project is the development, improvement and testing of methods for assessing the status of pollinators and their services and evaluating the impact of improved management. This should establish a methodological base that will be more easily replicated in future studies than is presently possible.

The criteria used for the selection and design of the demonstration (STEP) sites can serve as a useful guide to a wider range of benchmarks for monitoring pollination seervices.

6. Sustainability of the project

The outputs of the project have a value that will grow after the end of the project – those of improved datasets, new knowledge and understanding and improved capacity. The project is committed to putting into place the mechanisms to ensure the availability to all sectors of stakeholders. Nonetheless there is a risk of a less than maximum continuation in impact unless these tools and notably the Pollination Information Management System are located with an agency that can ensure its continuity, updating and access. In the case of this project it appears that the participation of FAO should ensure this.

By the end of the project the STEP sites in the seven countries will constitute an invaluable 'field laboratory' not only for continuing work on pollination services, but because of their structure which includes links between agro-ecosystems and wild habitats, for study of other key landscape linkages such as nutrient and water cycles. The commitment of the both the host countries and the international community to maintain the sites should be made explicit.

Secondary issues

7. Linkages with other focal areas.

Changes in climatic patterns will undoubtedly affect pollinators as much as many other better studied organisms. A particular danger is that disjunctions may occur between the distributions of plant and that of their pollinators under climate change. The database on the ecology of pollinators and their interactions (Annex M) will be a start in building the potential for predicting some of these potential shifts but a great deal of additional work will be needed to make this at all rigorous.

Linkage with projects or institutions engaged in modeling vegetational shifts under global climate change to enable inclusion of risks from pollinator changes could be a valuable outcome of the project.

8. Linkages to other programmes and actions

The project has arisen out of a number of earlier inititiatives, notably the International Initiative for the Conservation and Sustainable Use of Pollinators (IPI). It is clear that during proposal development there has been substantial interaction with a large number of relevant collaborators as is laid out in great detail in the Brief in paragraphs 47 to 70 (pages 21 to 27) and Annex H. There is a considerable overlap of personnel in many cases.

The level of potential complexity in these interactions does however raise questions of how these interactions will be managed by the project. Demands from outside can become very high; the project management will need to develop clear policies on their response to such demands.

9. Other beneficial or damaging environmental effects

The practices which will benefit pollinators will also benefit other sectors of biodiversity and the functions and services they perform. For example the reduction of the use of pesticides, the promotion of integrated pest management practices and the inclusion of wild habitats in agricultural landscapes will also promote the health of the biodiversity below-ground and the nutrient cycles and other services they provide.

10. Involvement of stakeholders

The project embraces a diversity of stakeholders from the farmers and their families at the demonstration sites to the global biodiversity science and policy community. Interactions with all these groups are described through out the Brief, and explicitly in paragraphs 131 to 136 (pages 44 and 45). Adequate consultation appears to have been carried out, and mechanisms (including the impressive capacity building programme) put in place for the inclusion of stakeholders in the decisions and actions of the project. Nonetheless the needs and demands of such a huge diversity of stakeholders are not easily maintained in a project of this complexity. The project management structure is well designed but will need to explicitly address on a continuous basis the issues of need to know and need for involvement. A knee-jerk principle of total inclusivity is easily embraced but ultimately unworkable.

11. Capacity-building

Capacity building is a major feature of the project as expressed in Outcome 3:
‘ Increased capacity for conservation and sustainable use of pollinators by farmers and land managers’ and documentary support is laid out in Annex P. The training covers a wide range of stakeholders from direct beneficiaries (farmers) to policy-makers and journalists, and also includes school children as future stakeholders. A component with particular global value is the development of a global network of identification specialists. As with many other components of biodiversity the status of pollinator taxonomy world-wide is totally inadequate to need and we continue to run the risk of losing species simply through failure to recognise them.

Once again the outcome statement does not do full justice to the breadth of the capacity building programme.

12. Innovativeness

This project is innovative in its very origins ie. that it addresses a neglected component of biodiversity. It is also innovative in taking an ecosystem and functional approach to the study of the organisms concerned.

Where innovation stops a bit short is in conceptualizing the threats to pollination services, and best practices to combat them – as already commented on in the report on Outcome 2 in Section 1. The authors should consider including some hypotheses on these aspects.

Professor M.J. Swift, MA, PhD on behalf of STAP

ANNEX C1. RESPONSE TO STAP TECHNICAL REVIEW

"Conservation and Management of Pollinator for Sustainable Agriculture through an Ecosystem Approach", a UNEP-GEF proposal

The partners contributing to this proposal thank the STAP reviewer for his thorough and productive review. Those comments in need of specific responses have been extracted from the review, with responses given beneath.

Introduction and General Issues.

A. Reviewer comment:
The authors should give some thought to re-wording the project objective for greater impact.
Response:
The suggestion that the attainable aims of the project may exceed our stated objectives is very much appreciated. The objective as stated does indeed focus on the process (enhanced understanding, conservation and use), while the suggested rewording focuses on the result (harnessing the benefits). We agree that project objectives should be impact and results-oriented, and have adopted the suggested change in paragraph 72 of the project brief, and in the statement of the immediate objective in the logframe and monitoring and evaluation plan.

B. Reviewer comment:
The Outcomes should stand alone as a group and Project Management be dealt with separately....As detailed below further work should also be done to ensure that the Outcome statements adequately reflect the intentions and richness of the work programme they describe. Whilst this may seem simply a semantic issue the Outcome statements (as well as the objective referred to above) will be the first and perhaps the only description of the project that many will read and refer to. As presently worded these do not do the project justice.

Response:
We have considered rewording of outcomes, and respond to each below. We also agree that Project Management should not be conceived or suggested of as an outcome, and we have addressed this by referring to the four outcomes, in paragraph 78 of the project brief, with project management mentioned as a fifth component separately from outcomes.

Key issues
5. Scientific and technical soundness of the project

C. Reviewer comment:
The wording of this outcome (1) does not adequately convey either the breadth or depth of the knowledge enhancement which it is intended to provide, and consideration should be give to re-wording the statement to emphasise issues of availability and access to

knowledge as well as indicating that the stakeholder relevance is wider than farmers and land managers.

Response:
We agree that the strength of this Outcome and component of activities is in the integration and greater accessibility of knowledge, not merely in the accumulation of information. We want to be cautious, however, of listing too many stakeholders; the stakeholders addressed (farmers, land managers and policy makers) comprise key decision makers and managers of natural resources, and other relevant stakeholders, such as the research community who can contribute to the use and development of the framework, are implicitly included in the process. The outcome has been reworded, as "Integrated and accessible knowledge base for management of wild pollination services, for farmers, land managers and policy makers"

D. Reviewer comment:
The authors state unequivocally in paragraph 94 that 'the actions that will need to be taken to conserve and manage pollinators are not completely known and will need to be developed in an adaptive manner'. This is thence a challenging but absolutely important piece of work. The approach appears to centre round a 'survey of good agricultural practice' but little detail is given in the paragraph 96 of the Project Brief devoted to this.

(and)

E. Reviewer comment:
The authors can improve the Brief by using in a summarised form some of the material from the Annexes to strengthen the paragraphs in the Brief so that a clearer view is given of both conceptual framework and the field activities that will be undertaken. The provision of one or a few hypotheses on the relationships between management practices and pollination services might also be undertaken.

Response:
These are valuable points; we do not want to stress the uncertainty so much as the fact that there is little work in characterising the value of practices that benefit pollinators, and the project will address that gap. To do so effectively, a framework for assessing the value of practices to pollinators needs to be in place early on in the project, and a rigorous method of asking questions and comparing results needs to be followed. This framework and methodology is elaborated in the annexes, and we have brought this into the proposal text in a more cohesive manner. Paragraphs 94-96 have been modified to address this issue

6. Identification of the global environmental benefits
The fourth Outcome of the project addresses issues to do with the mainstreaming of knowledge and information on the management of pollinators as key components of global biodiversity ie: Outcome 4. Mainstreaming of pollinator conservation and sustainable use.

F. Reviewer comment:
This wording is again inadequate; the intended outcome is surely that knowledge (and recommendations?) regarding pollinators and their services are mainstreamed with the impact of improving conservation and sustainable management of this component of biodiversity?

Response:
Indeed the phrasing of the outcome is a form of shorthand; it is awareness, policies and knowledge that are mainstreamed, for the benefit of pollinators, but we feel that this is implicit in the wording. Mainstreaming is defined as bringing an issue into the "prevailing current of thought, influence or activity" (Princeton WordNet). In that sense, it captures the need to move technical knowledge into the sphere of public awareness and policy.

7. Goals and operational strategies of GEF
(no responses needed)

8. Global context.
(no responses needed)

12. Replicability

G. Reviewer comment:
A key feature of the project is the development, improvement and testing of methods for assessing the status of pollinators and their services and evaluating the impact of improved management. This should establish a methodological base that will be more easily replicated in future studies than is presently possible.

Response:
We appreciate this reinforcement of the means by which pilot work in demonstration sites can lead to replicability, and have noted this in the section on Sustainability, Replicability and Risks, paragraph 120.

13. Sustainability of the project

H. Reviewer comment:
Nonetheless there is a risk of a less than maximum continuation in impact unless these tools and notably the Pollination Information Management System are located with an agency that can ensure its continuity, updating and access. In the case of this project it appears that the participation of FAO should ensure this.

Response: The commitment of FAO, as stated within the project document, to maintaining the knowledge base has been strengthened in a rewording of paragraph 129.

I. Reviewer comment:
By the end of the project the STEP sites in the seven countries will constitute an invaluable 'field laboratory' not only for continuing work on pollination services, but because of their structure which includes links between agro-ecosystems and wild habitats, for study of other key landscape linkages such as nutrient and water cycles. The commitment of the both the host countries and the international community to maintain the sites should be made explicit.

Response: We agree that adding other key landscape linkages to the investigations in demonstration sites will add considerable value. Discussion of research agendas in project sites have already included scope for interactions with other components, principly watershed and pest control aspects but others may enter as well. As country-driven projects with project activities on sites identified by national partners and stakeholders, the maintenance of sites will be the responsibility of host countries. Each country may address this differently (and the affordability of maintaining long term research structures may be differently perceived), but as noted in paragraph 46 the following commitments have been made in Ghana (agricultural extension and research institutions involved as partners in the project are committed to incorporating the research agendas adopted into their programs); in South Africa (an ecosystem services unit is being developed at SANBI, and this unit will be in a position to make sure that the outcomes of the pollination project continue to be mainstreamed into policy, as well as providing support for ongoing research on pollination); and in Pakistan (an outcome of the project will be to have pollination accepted as a means of attaining the objectives specified by the Government of Pakistan's agricultural policy. The project will be taken over by the Pakistan Agricultural Research Council under the Ministry of Food, Agriculture and Livestock (MINFAL) for recurrent funding to run the project after the expiry of the full-size project). Additionally, in Brazil, many demonstration sites will be managed by university researchers with long-term research agendas;

<u>Secondary issues</u>

14. Linkages with other focal areas.

I. Reviewer comment:
Linkage with projects or institutions engaged in modeling vegetational shifts under global climate change to enable inclusion of risks from pollinator changes could be a valuable outcome of the project.

Response:
Particularly in areas with abrupt topographical change where vegetational shifts due to climate change could be realised over relatively small areas (such as Kenya, Nepal, Pakistan and India), project partners have expressed an interest in including a focus on potential climate change impacts on pollination services. Some key interactions are noted in paragraphs 3 and 24. We agree with the suggestion that more formalised linkages with climate change researchers is warranted, and will be pursued in project implementation.

15. Linkages to other programmes and actions

J. Reviewer comment:
The level of potential complexity in these interactions does however raise questions of how these interactions will be managed by the project. Demands from outside can become very high; the project management will need to develop clear policies on their response to such demands.
Response:
The project as constituted is a contribution to the International Initiative for the Conservation and Sustainable Use of Pollinators (IPI); an initiative which has many stakeholders and participants. It is not intended that the project management unit would coordinate this initiative, and the unit can and should interact with other aspects of the IPI to the extent needed to fulfill and enhance project outcomes, but not beyond this. We appreciate the comment and will ask the International Steering Committee to elaborate more precise policies.

16. Other beneficial or damaging environmental effects

K. Reviewer comment:
The practices which will benefit pollinators will also benefit other sectors of biodiversity and the functions and services they perform. For example the reduction of the use of pesticides, the promotion of integrated pest management practices and the inclusion of wild habitats in agricultural landscapes will also promote the health of the biodiversity below-ground and the nutrient cycles and other services they provide.

Response:
We agree that stronger wording on the added value of interlinkages is warranted, and have added this in paragraph 83 of the project brief .

17. Involvement of stakeholders

L. Reviewer comment:
The project management structure is well designed but will need to explicitly address on a continuous basis the issues of need to know and need for involvement. A knee-jerk principle of total inclusivity is easily embraced but ultimately unworkable.

Response:
Advice well-taken. The specific roles and responsibilities of different bodies and ways of communications as indicated in the M&E plan will be further elaborated and made more concrete through the ToRs of these committees and bodies during the project appraisal phase

18. Capacity-building

M. Reviewer comment:
Once again the outcome statement does not do full justice to the breadth of the capacity building programme.

Response:
We do appreciate the comment that the actual attainments may exceed this stated outcome. However, it has been our concern that both for outcomes one and outcomes three, the general public is too large of a target audience; thus we have qualified the outcomes with a short list of a critical target audience. We agree that a larger interest group may well benefit and build capacity, but feel that we are limited in being able to monitor and evaluate a more broadly-stated outcome.

13. Innovativeness

N. Reviewer comment:
Where innovation stops a bit short is in conceptualizing the threats to pollination services, and best practices to combat them – as already commented on in the report on Outcome 2 in Section 1. The authors should consider including some hypotheses on these aspects.

Response:
We have done so, as discussed in the response to comment D and E above.

ANNEX C_2. WORLD BANK REVIEW

This project seeks to develop and disseminate methods for better conserving agricultural pollinators. It targets an often-neglected ecosystem function that is critical for much of the world's agriculture. According to the project documentation, global benefits accrue in three ways:

1) Conservation of globally significant pollinator diversity (some of the countries are centers of pollinator diversity).
2) Conservation of associated biodiversity providing resources to pollinators.
3) Development of good management practices for pollinators.

The focus on global benefits could be strengthened. Presumably the biodiversity mentioned in #2 is globally significant, but there is no mention of what biodiversity in particular is likely to benefit from taking an ecosystem approach to pollinator conservation in the participating countries.

Additionally, given the strong emphasis on learning in the project, and the fact that a major global benefit would be the results of #3 above, it may be appropriate to make this a BD-4 project and put more emphasis on global (as opposed to national) dissemination of learning, with a more focused and pro-active approach targeting areas of pollinator diversity, for example. This would help increase global benefits, especially for those areas where pollinators may not be globally significant, or where conserving them does not contribute to the conservation of globally significant associated biodiversity.

The World Bank, Global Environment Facility
MSN MC4-419, 1818 H Street, N.W.
Washington D.C. 20433
Tel: (202) 473 7886 / 473 6128; Fax: (202) 522 3256
Email: wbgefoperations@worldbank.org

ANNEX C_3. RESPONSE TO WORLD BANK REVIEW

We thank the World Bank for their comments on strengthening the global benefit focus of this project. We would like to emphasise that this project focuses on the conservation of biodiversity both at the species level (diversity of pollinators and associated floral resources) and at the level of an ecosystem service. We have added some wording to the proposal on the benefits to be accrued in conservation of associated biodiversity, but continue to emphasise that it is the organisms but also the functions whose conservation will be enhanced globally by the uptake of project outcomes.

altered text: para 81 ". Global benefits of the project will be both to conserve pollinator species and their associated biodiversity in agroecosystems, but also their important ecosystem function contributing to agricultural yields and quality. "

In addition we have made a more explicit statement of global benefits in the Incremental Cost Analysis, Annex A, as:

Global benefits of the project are (a) the conservation of globally significant pollinator diversity; (b) the conservation of associated biodiversity providing resources to pollinators, including associated floral resources and vegetation providing nesting sites in representative agro-ecosystems; (c) the development and dissemination of practices to conserve and manage wild pollination services that can be used both within and outside the project countries; (d) development of an expanded knowledge base and network of expertise on management of pollination services, made accessible globally; (e) provision of information on status and trends of pollinators in representative agroecosystems made available to policymakers (f) development of tools to valuate the costs and benefits of pollination services to human livelihoods and (g) concrete demonstrations of the principle that ecosystem services such as pollination sustain both agriculture and biodiversity conservation, and (h) introduction of innovative practices and policies to incorporate conservation of pollinators in spatial planning.

And the following sentence in quotes added:

Additional global biodiversity benefits that will accrue through the application of this approach will include other crop-related biodiversity such as beneficial insects and soil organisms. Pro-pollinator systemsfocus on the benefit of additional aspects of biodiversity, such as floral associates of pollinators in addition to crops, and vegetation that provides nesting sites. "In a general sense, the practices to be identified and promoted through this project will conserve a greater diversity of species- in particular of plants, insects, and microfauna- in agricultural areas, recognising that such diversity is beneficial to the health and sustainability of production landscapes." In this sense, the conservation of wild biodiversity in cropping systems will be recognised for its value and conserved.

With reference to the project's applicability to BD-4, we agree that the project is relevant to this priority. Paragraph 62 has been altered to reflect this.

Re distance learning, the project as currently structured does stress global dissemination of learning, although we have increased an emphasis on the distance learning program, as an organising principle from the beginning in the development of curricular materials, so that lessons learned in one country are globally available.

To reflect this, we have changed para 108 with the sentences in quotes:

At project initiation, an overall course structure for distance learning in conservation and management of wild pollination services will be established. "The overall structure and design of an e-learning course will serve as an organising principle for the development of all curricular materials throughout the project. The Technical Advisory Group will, in its initial meeting, identify the scope, structure and relevant modules. Course modules appropriate for the initial training of trainers, developed with instructional designers, will be made available to the capacity building activities in all countries, and will be adapted as needed in each country. Course content will be enhanced based on project experiences in demonstration sites and other activities, to create a comprehensive distance learning course for both extension and university courses. Profiles of experiences in developing best practices in one country will be available to use as case studies for training in all other countries." This distance learning courses, including informational material, case studies, exercises and exams, will be developed and tested in pilot programs in at least two countries. The effectiveness of a distance learning program will be assessed in year four, and by the end of the project, arrangements will be in place for a sustainable host for the programme to take over its full management, making it available globally. Possible hosts for distance learning have been identified in the project development phase.

ANNEX D. LETTERS OF ENDORSEMENT

ANNEX D_1. CO-FINANCING COMMITMENT LETTERS