GLOBAL ENVIRONMENT FACILITY (GEF) PROPOSAL
FOR A PDF BLOCK B GRANT:
PIPELINE ENTRY AND CEO APPROVAL OF THE PDF B

Project Title:	Conservation and Management of Pollinators for Sustainable Agriculture through an Ecosystem Approach
Implementing Agency:	UNEP
Executing Agency:	FAO
Requesting Countries:	Global – Africa (Ghana, Kenya, South Africa), Asia (China, India, Nepal, Pakistan), Brazil
GEF Focal Area(s):	Biodiversity
GEF Operational Programme:	13 – Conservation and Sustainable Use of Biological Diversity Important to Agriculture
Total Cost of PDF-B:	US$ 1,645,000
PDF-B grant requested from GEF:	US$ 700,000

PDF-B co-funding by source

Source	**Cash (US$)**	**In kind**
FAO	135,000	242,000
API	0	125,000
ICIMOD	34,000	120,000
BPI	66,000	223,000
Total	**235,000**	**710,000**

PDF-A Grant awarded:	No
Estimated Starting Date Of PDF B:	July 2003
Estimated Duration Of PDF B:	24 months
Estimated Starting Date of Full Project:	July 2005
Estimated Total Costs Of Full-size Project:	US$ 12 million
Estimated Cost to GEF:	US$ 6 million
Full Project Duration:	5 years

ACRONYMS

API	African Pollinator Initiative
ARC-PPRI	Agricultural Research Council-Plant Protection Research Institute
BPI	Brazilian Pollinators Initiative
CBD	Convention on Biological Diversity
COP	Conference of the Parties
EMBRAPA	Brazilian Corporation for Agriculture Research
ELCI	Environment Liaison Center International
FAO	United Nations Food and Agriculture Organisation
FNPP	FAO Netherlands Partnership Programme
GEF	Global Environment Facility
HKH	Hindu Kush Himalayas
ICIMOD	International Centre for Integrated Mountain Development
ICIPE	International Centre for Insect Physiology and Ecology
ICT	Information and Communication Technologies
IPI	International Pollinator Initiative (the CBD International Initiative for the Conservation and Sustainable Use of Pollinators)
ISC	International Steering Committee
OP	Operational Programme
PDF	Project Development Facility
SBSTTA	Subsidiary Body for Scientific, Technical and Technological Advice
UNEP	United Nations Environment Programme
USP	University of São Paulo

I. BACKGROUND AND CONTEXT

Global Significance of Pollinators

1. Pollinators contribute to the maintenance of biodiversity, and ensure the survival of plant species including plants that provide food security to innumerable rural households. Pollination is an essential ecosystem service, as it enables plant reproduction and food production for humans and animals (fruits and seeds) that depend, to a large extent, on the symbiosis between species, i.e., the pollinated and the pollinator. The reduction and/or loss of either will affect the survival of both.

2. More than 75% of the major world crops and 80% of all flowering plant species rely on animal pollinators[1]. Of the hundred or so animal-pollinated crops which make up most of the world's food supply, 15% are pollinated by domestic bees, while at least 80% are pollinated by wild bee species and other wildlife[2]. Diversity among species, including agricultural crops, depends on animal pollination. Thus, pollinators are essential for "diet diversity", biodiversity, and the maintenance of natural resources.

3. The principle pollinators are bees. Approximately 73% of the world's cultivated crops, such as cashews, squash, mangoes, cocoa, cranberries and blueberries, are pollinated by some variety of bees, 19% by flies, 6.5% by bats, 5% by wasps, 5% by beetles, 4% by birds, and 4% by butterflies and moths[3]. Of the hundred principal crops that make up most of the world's food supply, only 15% are pollinated by domestic bees (mostly honey bees, bumble bees and alfalfa leafcutter bees), while at least 80% are pollinated by wild bees and other wildlife (as there are an estimated 25,000 bee species, the total number of pollinators probably exceeds 40,000 species). Services that are provided by native pollinators (non-honeybee species) are estimated to be worth US$ 4.1 billion a year to United States agriculture alone[4]. The value of the annual global contribution of pollinators to the major pollinator-dependant crops is estimated to exceed US$ 54 billion[5].

4. The 25,000 different species of bees differ significantly in size and habit requirements, and diverge accordingly in the plants they visit and pollinate. Though

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[1] Nabhan and Buchmann 1997:136,138 *in* World Resources 2000-2001-The Fraying Web of Life (UNDP, UNEP, WB, WRI); Kevan,P.G. & V.L.Imperatriz-Fonseca (editors) 2002. Pollinating Bees: The Conservation Link between Agriculture and Nature. Ministry of Environment, Brazil

[2] Prescott-Allen, R. and Prescott-Allen, C. 1990. *How many plants feed the world?* Conservation Biology 4(4): 365-374; *and*
Ingram, M., Nabhan, G.P., and Buchmann, S.L. (with assistance form the Board of Advisors of the Forgotten Pollinators). 1996. Ten essential reasons to protect the birds and the bees. Arizona-Sonora Desert Museum, Tuscon, AZ.

[3] Fact Sheet: Pollinator Diversity. http://www.albany.edu/natweb/dispoll.html

[4] Prescott-Allen, R. and Prescott-Allen, C. 1990. *How many plants feed the world?* Conservation Biology 4(4): 365-374; *and* Ingram, M., Nabhan, G.P., and Buchmann, S.L. (with assistance form the Board of Advisors of the Forgotten Pollinators). 1996. Ten essential reasons to protect the birds and the bees. Arizona-Sonora Desert Museum, Tuscon, AZ.

[5] Kenmore P. and R. Krell 1998. Global Perspectives on Pollination in Agriculture and Agroecosystem Management. International Workshop on the Conservation and Sustainable Use of Pollinators in Agriculture, with Emphasis on Bees. October 7-9, Sao Paulo, Brazil

bees form the most important group of pollinators, other animals, such as bats, birds, butterflies, moths, flies and beetles also play key roles in pollination. Both the diversity of wild plants and the variability of food crops depend on this diversity.

5. Pollination is a complicated process with some pollinators being "generalists" and others being species-specific. Likewise, many different pollinators visit some plants, while other plants have species-specific pollinator requirements. Given this complexity, managing pollination as an ecosystem service requires a comprehensive understanding of the pollination process and the application of that knowledge in the design and implementation of intricate management practices. In most cases, there is limited knowledge about the exact relations between individual plant species and their pollinators.

6. Pollinator diversity is directly dependent on plant diversity and vice-versa. The decline in pollinator diversity and in population levels of various pollinators also threatens agricultural biodiversity. No other natural phenomenon illustrates more vividly the principle that conservation measures must be directed at ecological processes, and not just individual species. Indeed, pollination, a fundamental step for plant reproduction, is an ecological service that cannot be taken for granted. Plants are the primary producers in terrestrial ecosystems and direct providers of many ecosystem services such as carbon sequestration, prevention of soil erosion, nitrogen fixation, maintenance of water tables, greenhouse gas absorption, and food and habitat providers for most other terrestrial and many aquatic life forms. Pollinators, through facilitating plant reproduction, thus play a crucial role in the maintenance of ecosystem services and functions. The assumption that pollination is a "free ecological service" is erroneous. It requires pollinating agents which themselves require resources for nesting, feeding and reproduction in the form of vegetation, prey, and certain habitat conditions; as well as the application of "pollinator-friendly" land-use management practices to ensuring their survival.

Threats to Pollinators and Attendant Ecosystem Services

7. Throughout the world, agricultural production and agro-ecosystem diversity and biodiversity are threatened by declining populations of pollinators. The major contributors to this decline in pollinator populations are, *inter alia*, habitat loss and fragmentation, land management practices, agricultural and industrial chemicals, parasites and diseases, and the introduction of alien species.

8. Ecological dangers of pollinator decline include the loss of essential ecosystem services (particularly agro-ecosystem services) and functions that pollinators provide. From an economic point of view, it is also important to conserve pollinators. As noted previously, the services of native non-honeybee species to United States agriculture alone is estimated to be approximately US$ 4.1 billion a year. From an agricultural point of view, ensuring the conservation and sustainable management of pollinators is very important because pollinators are an agricultural input.

9. Pollinator populations are at increased risk of extinction, or of population densities being reduced below levels at which they can sustain pollination services in agroecosystems, natural ecosystems, and for the maintenance of wild plant reproductive capacity. The *Apis laboriosa*, for example, is an indigenous species native to the Hindu Kush Himalayas, and can only be found in parts of Nepal, Bhutan and China. A particular characteristic is that it nests only on the cliffs found beyond the reach of people. The *Apis laboriosa* pollinates local mountain flora (resulting in sustainable natural seed spread), and also provides honey for "honey-hunting" – an activity of cultural significance (it is dangerous and involves special rituals, as well as satisfying the leisure requirements of isolated mountain people). Yet, despite its global and local importance (endemic to a limited region, contributes to biodiversity, food security and income generation), *Apis laboriosa* is being threatened by the introduction of exotic species, tourism (including "honey-hunting tourism") and habitat (food source) destruction.

10. A provisional survey indicated that of 165 genera of birds, mammals and reptile pollinators, 100 (or 60%) of these genera include species of conservation concern. Eighty-two mammalian pollinators and 103 avian pollinators are considered threatened or extinct according to IUCN. The ratio of threatened vertebrate pollinators to the total numbers of vertebrates in each genus is extremely high; indicating that the world's nectar-feeding wildlife may be as vulnerable as carnivores to human induced extinction pressures. An estimated 62% of all flowering plants may be suffering some degree of reduced regeneration from seeds due to pollinator scarcity[6].

11. Due to declining pollinator populations and changing cultivation practices, an increasing number of farmers around the world are now paying for pollination services and are importing and raising non-native pollinators to ensure crop production. In many developing countries, however, external pollination services are not available and rural communities have to live with reduced quantity, quality, and diversity of foods. In fruit orchards in Western China, the decline of useful insect populations has led farmers to pollinating by hand, acting as "human bees". Of the 25,000 species of bees, a single species, the honey bee (*Apis mellifera)* native to western Eurasia and Africa, is the principal species that is managed for pollination services. In most countries, including those where the honeybee is indigenous, its populations are significantly reduced by pests and diseases, such as the varroa mite.

International Response to the Status of Pollinators

12. Pollinator management and conservation is a global concern. Decision III/11 of the CBD established the Programme of Work on Agricultural Biodiversity and called for priority attention to components of biological diversity responsible for the maintenance of ecosystem services important for the sustainability of agriculture,

[6] Nabhan, G.P. 1996. Pollinator Redbook, Volume 1: Global List of Threatened Vertebrae Wildlife. Wildlife Species Serving as Pollinators for Crops and Wild Plants.

including pollinators. In October 1998, a Workshop on the Conservation and Sustainable Use of Pollinators in Agriculture, with an Emphasis on Bees, was held in Sao Paulo, Brazil. The outcome of this workshop was the Sao Paulo Declaration on Pollinators, which was submitted by the Government of Brazil to SBSTTA 5.

13. Considering the urgent need to address the issue of world-wide decline of pollinator diversity, the 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 Pollinator Initiative - IPI) in 2000 (COP decision V/5, section II) and requested the development of a plan of action. The CBD Executive Secretary was requested to "invite the Food and Agriculture Organisation of the United Nations to facilitate and co-ordinate the Initiative in close co-operation with other relevant organisations...". In November 2000, FAO organised 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, endorsed by SBSTTA7, and recommended for adoption by CBD COP 6. The Plan of Action of the IPI, as adopted at COP 6 (decision VI/5), provides the contextual background for this project proposal.

14. The aim of the International Initiative for the Conservation and Sustainable Use of Pollinators (IPI) is to promote co-ordinated action world-wide to:
    - Monitor pollinator decline, its causes and its impact on pollination services;
    - Address the lack of taxonomic information on pollinators;
    - Assess the economic value of pollination and the economic impact of the decline of pollination services; and
    - Promote the conservation and the restoration and sustainable use of pollinator diversity in agriculture and related ecosystems.

II. SUMMARY: PROJECT OBJECTIVES AND DESCRIPTION

15. Despite their tremendous importance, little is known about wild pollinator populations, pollinator interactions with other elements of crop and crop associated biodiversity, the ecology of pollinators, or the ultimate consequences of their decline. Furthermore, there is a lack of information and knowledge on the enabling environment that contributes to the decline of pollinator numbers (such as perverse policy incentives, market fluctuations, the price of agricultural inputs, legislation, and so forth). Despite international commitment to tackle issues related to the conservation and sustainable use of pollinators, concrete consolidated action is to yet be taken - many countries, for example, lack the capacity to undertake initiatives. At the local level, often other factors (such as market priorities) take precedence over the conservation of pollinators, and influence agricultural management choices for agricultural production and appropriate farming practices, often at the expense of pollinators.

16. In order to secure sustained pollinator services in agricultural ecosystems, far more understanding is needed of the extent of the multiple goods and services provided by

pollinator diversity and the factors that influence their population fluctuations. Where there is a lack of pollinators, food security and economic repercussions can be felt (e.g. decreased crop yields). Therefore, it is necessary to identify management practices that minimise negative impacts by humans on pollinators, promote the conservation and diversity of native pollinators, and conserve and restore natural areas necessary to optimise pollinator services in agricultural systems. This could include furthering understanding of the impact of genetically modified organisms (GMOs) on pollinators – both from the point of view of direct impact, as well as the impact from a pollinator habitat and behaviour perspective. There are two important and intricately inter-connected aspects to pollinator services, those required for successful agriculture and those required for maintenance of natural biodiversity. Both depend on the survival of natural habitats and, in the case of agriculture in particular, on the spatial relationship between natural habitats and crops.

17. API, Brazil and ICIMOD have two main characteristics in common: (i) their experience and involvement in issues related to the conservation and sustainable use of pollinators; and (ii) their commitment to these issues. Moreover, they complement each other, in terms of their areas of expertise, capacity, and comparative advantages. Countries were selected on the basis of not only their needs, but also on what they have to offer, in terms of knowledge, to be shared at local, national and international levels. Brazil, for example, is a pioneer in bringing the issue of pollinator conservation and sustainable use to the international level, and hence it is expected to be instrumental in moving ahead the agenda of pollinators in Central and South American countries. The African countries selected are at different stages in the conservation and sustainable use of pollinators. Overall, these countries need strengthening of their knowledge base, as well as national capacity for addressing the issues at both technical and policy levels. In Asia, countries selected are the ones where ICIMOD has initiated pollinator activities, and can build upon them. Strengths include work on adaptive management and the application of best management practices at the field level. This complementarity between initiatives and countries will generate synergies and provide a more solid “partnership” base for the project, where information exchange, and the cross-sharing of local, national and international experiences and lessons learnt plays a significant role.

18. The development goal of the project is to conserve, sustainably use and manage pollinators. The project has three principal objectives. First, to develop and implement tools, methodologies, strategies and best management practices for pollinator conservation and sustainable use. Second, the project will build local, national, regional and global capacities to enable the design, planning and implementation of interventions to mitigate pollinator population declines, and establish sustainable pollinator management practices. This would also include raising awareness and strengthening existing networks dedicated to conservation of pollinators. Lastly, the project will promote the co-ordination and integration of activities related to the conservation and sustainable use of pollinators at the international level to enhance global synergies. All told, these objectives are expected to address current policy and institutional barriers to sustainable pollinator

management, and contribute to increasing agricultural production and supporting sustainable livelihoods.

19. Bearing in mind these objectives, and generally following the framework of the IPI Plan of Action, specific priority activities[7] have been identified and will be implemented at the international, regional, and national levels. The project will not only assist countries in achieving their obligations to the CBD (through the partner institutions), but will do this in collaboration with each other, at an international level, where experiences in pollinator- friendly practices can be shared. It will allow for the exchange of methodologies, best practices and lessons learnt at the national, regional, and international levels. These efforts would also enhance the potential replicability of management interventions. Part of FAO's role is to facilitate the implementation of these activities and to create a forum for the sharing of knowledge. FAO will also ensure that pollinator-related activities already in progress will be capitalised upon, as appropriate.

20. The four project components are:
    - Development of a Knowledge Base;
    - Extension and Promotion of Pollinator-friendly Best Management Practices;
    - Capacity Building and Awareness Raising;
    - Sharing of Experiences and Dissemination of Results.

These project components are discussed in more detail below.

21. Component One: Development of a Knowledge Base. *The objective of this component is to improve the understanding of pollinator decline from scientific, ecological and socio-economic perspectives.* More specifically, activities within this component will fill information and knowledge gaps on the following issues: a) status of pollinators; b) ecological services provided by pollinators; c) identification of agricultural practices that promote/conserve pollinator diversity (borders, hedges, IPM, cover crops during fallow periods, etc); d) identification of habitat management practices that promote/conserve pollinator diversity (establishing forest refugia, managing succession stages of host plants preferred by pollinators, planting pollinator friendly species on borderlands); and e) identification of nectar corridors critical for migratory pollinators, such as bats and hummingbirds. This work will build upon existing information, when and where available. Study papers will be produced on these subjects during the PDF-B phase, which will lay the foundation for Full-size Project design and implementation. Study papers will be made available through the website which will be developed for the project. Through partners' networks, study papers can also be distributed at the national level. Other knowledge gaps may also be identified, and documented, during the PDF-B.

22. This component will also address the monitoring and study of pollinator populations in order to understand why populations are declining and to determine the impact of

[7] All activities should be undertaken in accordance with the relevant national and international legislation.

these declines on pollinator services. A global network of co-operators (to be identified during the PDF-B process), will be established to monitor diversity of pollinators over time in selected areas of the world that represent the most important ecotypes. Monitoring activities will also include the comparison of natural sites with selected agricultural sites. Based on initial assessments, specific areas of intervention will be identified for further study. The study of native populations will be targeted. For example, the role of indigenous bees will be investigated in the context of their role in natural and managed ecosystems and this understanding will be translated into best practice guidelines. The change of agricultural landscapes, pesticide use and other intensive agricultural practices, or, for example, the use of genetically modified organisms, also all require monitoring mechanisms to allow evaluation or assessment of the environmental impact of these actions on pollinators. Hence, methods for monitoring pollinators, their diversity and efficiency, will be developed, standardised, and applied. It is expected that monitoring will also be the responsibility of national-level entities, and build upon existing monitoring initiatives already undertaken for other purposes (if possible – to be identified during PDF-B phase), but to include a chapter on pollinators. For example, other possibilities could be to liaise with existing work, and databases, on endangered species (e.g. IUCN), where endangered indigenous pollinator populations are concerned (e.g. *Apis cerana).*

23. The economic value (both direct and indirect) of pollinators will also be investigated. These activities will include the evaluation, in economic terms, of different crop-pollinator-pollination systems in order to identify optimal use of pollinators in sustainable agricultural systems.

24. The lack of taxonomic information with regards to pollinators creates a serious bottleneck in global and local initiatives to address and mitigate the threats that contribute to pollinator decline. The project will develop simple identification keys for bee genera and other identification tools (species catalogues, distribution maps, host plant keys, pollinator nesting sites, etc.) using the latest information and communication technologies (ICTs) which will strengthen the capacity of bee taxonomists. Information from taxonomic efforts will be linked to existing global databases (which will be explored during the PDF-B phase). These databases will be linked to the project website.

25. Issues of storage, maintenance and updating of the knowledge base under this component will be addressed more specifically during the PDF-B stage, when there will be a targeted identification of people and/or entities that are best equipped to undertake these issues (such as already existing databases). In addition, FAO will play a leading role in information collection and dissemination. The purpose of the entire knowledge base component is to gain a better understanding of targeted issues surrounding pollinator conservation and sustainable use, in order to develop the Full-size project. The knowledge will also be disseminated through the project website to build knowledge at a global level and through the partner entities of the project, who will be responsible for disseminating information at the national and local levels, whether it be by, *inter alia,* distributing copies of study papers, or presenting this

information to participants at national and regional workshops. Cost effective options will be selected building on existing networks and databases, etc.

26. Component Two: Extension and Promotion of Pollinator-friendly Best Management Practices. *The objective of this component is to identify, document and disseminate innovations, technologies and best practices of farmers, including indigenous and local communities, for sustaining pollinator diversity, agro-ecosystem services and appropriate natural resources management.* Activities will include farmer field visits, identifying (voluntary) certification practices, developing management techniques (e.g., for rearing and nest habitat conservation). In addition, demonstration sites, identified during the PDF-B stage, will be established to illustrate and validate "pollinator-friendly" best management practices.

27. Demonstration sites will serve a number of purposes. First, they will put into practice lessons learnt from Component One. This would include, for example, showing linkages between sustainable native pollinator management and increased crop productivity, or the effect of native pollination *vs.* "artificial" pollination on seed and fruit quality. Second, they will demonstrate best management practices developed *with* farmers, to farmers and local groups and in doing so raise awareness and interest in exploring the possibilities of managing pollination for enhanced agricultural production. Third, demonstrations will serve to raise awareness of the role that pollinators play in securing ecosystem functions and services. Fourth, the results from the demonstration site activities will be brought to the attention of policy and decision makers, and government officials so they can see first hand the benefits of conserving pollinator biodiversity and the benefits that accrue to farmers in the form of increased agricultural production. The benefits of conserving pollinators are then more likely to be considered in policy measures to address habitat destruction and the underlying reasons for habitat destruction (such as perverse incentives), or issues related to market access.

28. The project will also promote improvements in the policy environment (e.g. agriculture and environment), through the development of incentive measures for the adoption of pollinator-friendly practices, including incentives for establishing/maintaining natural areas within and nearby agricultural landscapes. In addition, "bee-smart" certification programmes will be developed for commercial agriculture, particularly the export market[8].

29. Component Three: Capacity Building and Awareness Raising. *The objective of this component is to* ***build capacity*** *at the local/field, national and international levels to sustainably manage and conserve pollinators and to* ***increase awareness*** *about the value of pollinator diversity and the multiple goods and services pollination provides with a view to promoting and supporting sustainable and "pollinator-friendly" best management practices*. Stakeholders to be targeted in this component will include farmers, producer organisations, agricultural co-operatives and enterprises, resource managers, consumers, and decision-makers. Training will be provided to a wide range

[8] Proposed incentive measures and certification programmes should not constitute barriers to trade.

of stakeholders, including taxonomists (e.g. training in methodologies), youth, policy makers (e.g. field visits to demonstration sites), farmers and farmer-led organisations (e.g. adaptive management), local communities and others. Examples of other possible training approaches includes the use of farmer field schools, development of practical manuals, adding appropriate "packages" of information on pollinators to national curricula for agricultural extension officers, encouraging partnerships with groups from the private and public sector already engaged in dissemination of farming information (such as womens' groups), targeting media such as newspapers, radio, etc. Strengthening capacities (equipment, specimen collections, self-organisation for participatory research and learning) of existing institutions will be pursued as opposed to creating new organisations.

30. Awareness raising will be achieved, *inter alia*, by distributing resources (guides, hand books, teaching materials etc.); and educational material for schools, universities and technical colleges; and attractive press (media) material for television, radio, internet, etc. Increased awareness will help support the adoption of sustainable agricultural practices by farmers and the promotion of sustainable policies.

31. Component Four: Sharing of Experiences and Dissemination of Results. *The objective of this component is to share experiences and disseminate results of the project related to the conservation and sustainable use of pollinators. Results of demonstration activities, best management practices, dissemination of information on tools and methodologies, and information on other relevant studies will be disseminated within the regions, but also globally.* Existing networks will be used to take advantage of their communication and dissemination mechanisms. In addition, opportunities to create/strengthen partnerships and dialogue with other networks will be examined during the PDF B. The project will provide, *inter alia*, a forum to share knowledge and capitalise on pollinator-related activities. Other methods for information dissemination will also be identified during the PDF-B phase, such as electronic journals, support for conferences, publication of research results and capacity-building case studies.

32. The Full Project will contribute to the overall objectives of the International Pollinators Initiative, and result in the following outcomes within each project component as noted below:

Component One: Development of a Knowledge Base

- Enhanced and standardised "current status and monitoring" tools and techniques.
- Enhanced understanding and awareness on the ecological and economic value of pollinators, the causes of pollinator decline and its impact economically and on pollination services.
- Improved understanding of management practices that contribute to the conservation/restoration of pollinator diversity.

- Establishment and/or updating of databases on pollinators, their host plants, biogeography, nesting requirements, etc.

Component Two: Extension and Promotion of Pollinator-friendly Best Management Practices

- Expanded diversity of managed pollinators, e.g., the management of meliponine bees, allodapine bee, leafcutter bees etc.
- Adoption of pollinator-friendly management practices.

Component Three: Capacity Building and Awareness Raising

- Improved local taxonomic information and capacities.
- Improved farmer capacity to manage pollinators sustainably.
- Increased capacity to conserve and sustainably use and manage pollinators by a wide range of stakeholders (other than farmers).
- Strengthened pollinator networks.
- Enhanced integration of pollination issues into sectoral policies, including agriculture and environment.
- Increased awareness at local, national and global levels.

Component Four: Sharing of Experiences and Dissemination of Results

- Improved global co-operation and networking.
- Improved collaboration between the local agriculture sector institutions and local environment institutions for pollinator conservation and management.
- Increased awareness of and access to local, national, regional and international efforts and experiences related to the conservation and sustainable use of pollinators.

III. SYNCHRONICITY WITH STRATEGIC PRIORITIES IN BIODIVERSITY DURING GEF PHASE III

33. The proposed project is fully consistent with the Strategic Priorities Two and Four in the Biodiversity Focal Area for GEF Phase III.

34. Consistent with *priority two*, the project will contribute to the integration of biodiversity conservation in agricultural management practices and sustain capacities for integration. The outputs of the project will assist countries to better understand the role of pollinators in agricultural productivity and in supporting the provision of ecosystem goods and services. Central to the project intervention strategy is building capacity to manage pollinators and raising awareness of the economic value of the services that they provide. Constraints within the enabling environment that preclude the consideration of pollinators within the context of land and resource management decisions and policy-making will be identified and strategies proposed to overcome them. Consistent with *priority four*, the project will identify, analyse, demonstrate, and disseminate replicable best management practices for conservation and sustainable use of pollinators. North-south and south-south scientific cooperation

will be supported through the implementation structure, which relies on strong regional networks as project partners.

IV. ELIGIBILITY

35. The countries that will be participating in the proposed project have all ratified the Convention on Biological Diversity. Brazil: 28/02/1994, China: 05/01/1993, Ghana: 29/08/1994, India: 18/02/1994, Kenya: 26/07/1994, Nepal: 23/11/1993, Pakistan: 26/07/1994, South Africa: 02/11/1995.

36. The proposed project responds to the guidance of the CBD to the GEF, in particular to Decision V/5, which requests the financial mechanism to support the development and implementation of the IPI: "Requests the Executive Secretary, the Subsidiary Body on Scientific, Technical and Technological Advice and the financial mechanism to support the development and implementation of the Initiative and invites Parties and Governments to collaborate and compile case-studies and implement pilot projects, making use of the clearing-house mechanism, and to report to the Conference of the Parties at its sixth meeting". (Decision 5/V paragraph 18).

37. In the report of GEF to COP 6 (UNEP/CBD/COP/6/9), paragraph 25 states that "the operational programme on agrobiodiversity provides opportunities for countries to address this [development and implementation of the International Initiative for the Conservation and Sustainable Use of Pollinators in Agriculture] specific need identified by the Conference of Parties at its fifth meeting".

38. The proposed project is also consistent with the objectives of Operational Programme 13 "Conservation and Sustainable Use of Biological Diversity Important to Agriculture". Project activities are consistent with paragraphs 19-21.

V. INCREMENTAL COSTS

Baseline Scenario

39. Limited information, knowledge, capacity and awareness on the importance of pollinators (particularly indigenous pollinator populations) prevents stakeholders from developing comprehensive strategies for pollinator conservation and sustainable use. Taxonomic capacity and knowledge, the behaviour of pollinators (their interactions with crops and the surrounding environment and with other components of crop and crop-associated biodiversity), the ecosystem services that pollinators provide are all areas that require greater understanding. At the management level, there is also little knowledge of and experience with best practices for pollinator management for specific ecotypes, agro-ecosystems, crops, or pollinator species. What information that does exist is not shared at the international level due to a lack of a centralised entity that could facilitate such needed international co-operation. The lack of agreed and standardised monitoring systems and guidelines for pollinator

monitoring represents another constraint. Finally, co-operation at the international level is minimal resulting in uncoordinated and disjointed efforts to make progress on conservation and sustainable use of pollinators.

40. Most efforts to conserve pollinators focus on the Italian and African honeybee, for two reasons. First, there are direct economic benefits for doing so, and, second, in most parts of the world the honeybee is the only pollinator for which technology to manage pollination is widely available. Honeybees are not the only "manageable" pollinators, as demonstrated in meliponiculture and with alfalfa leafcutter bees; however, people have focused their efforts on the use of a single species to obtain improved production in a diversity of crops. Wild pollinators represent a reservoir of pollination capacity that is potentially as important for agricultural crops as it is for the reproductive viability of native plants, including wild relatives of crop species. Honeybees often receive credit for pollination done by other pollinator species.

41. To date, at the international level, there is little or no recognition of indigenous knowledge in the conservation and sustainable management of pollinators and on the cultural role pollinators may play in local communities.

42. The baseline activities for the Full-size Project consist of the continuation of ongoing government efforts and donor financed projects to promote the sustainable use of pollinators, research on pollinator populations, and their diversity and function(s) within one area. Currently, these activities are carried out in isolation and the majority of the effort is on honeybees. Limited work is being carried out on wild pollinators, their biodiversity and habitats, leading to a poor understanding of the contribution of wild pollinators to overall biodiversity maintenance (including agrobiodiversity) and agricultural productivity.

<u>Alternate Scenario</u>

43. Through GEF-funding, a globally co-ordinated effort to conserve and sustainably use pollinators with emphasis on bees (other pollinators could be considered as well, e.g., bats, birds, butterflies) will be set in motion that will feed into the IPI framework. The benefits that will accrue from the project will be local, national and global in nature.

44. Global benefits from the project will include: a) improved understanding of the interaction between biodiversity and the diversity of pollinators, including wild pollinators; b) enhanced capacity to manage pollinators in a sustainable way will lead to the conservation of pollinator populations and attendant agrobiodiversity and plant biodiversity; c) beneficial agricultural policies will help reduce pressure on this globally significant component of agrobiodiversity; d) global dissemination of best practices through various networks; e) uniform monitoring protocols; f) increased knowledge of pollinators (their role as a component of crop-associated biodiversity, in the provision of ecosystem services, and their economic contribution to agriculture and agricultural productivity); and g) world-wide systematic and co-ordinated effort to conserve and sustainably use pollinators while raising awareness of their importance.

45. At the local level, benefits will include: a) improved agricultural productivity; b) increase in farmer incomes; c) enhanced food security; d) reduced use of pesticides (improved public health); and e) improved management of ecosystem services. Farmers will play an important role in (a) providing local, traditional and indigenous knowledge pertaining to pollinators; (b) demonstrating and/or implementing practices at the field level; and (c) disseminating information at the local level.

46. Some outcomes will result in benefits of both a global and local nature. Farming populations will become more aware of the importance of pollinators both in terms of the ecosystem services they provide and thus their role on crop and crop-associated biodiversity. They will better understand the need to utilise pollinators as an agricultural input in farming practices in order to increase, and sustainably manage, agricultural productivity and hence decrease the need for external agricultural inputs, and their cost and negative biodiversity implications. Managing pollinators for increased agricultural productivity and pollinator conservation will, through a "top-down/bottom-up" approach (global ↔ regional ↔ national), enlighten policy and decision makers as they re-examine policy and incentive issues that impact pollinators.

47. GEF resources for the proposed Full-size Project would cover the incremental cost associated with the following activities:

- Development/enhancement of standardised tools and techniques to assess and monitor status of pollinators;
- Establishment and/or updating of databases on pollinators, their host plants, biogeography, nesting requirements, etc;
- Development of demonstration sites to test/illustrate/validate "pollinator-friendly" best management practices;
- Further development of taxonomic information and capacities;
- Increasing information availability to farmers and other stakeholders to improve their capacity in managing pollinators in a sustainable way (capacity building and awareness-raising);
- Training of stakeholders to conserve and sustainably use of pollinators;
- Promoting regional co-operation and inter- and intra-regional and global sharing of best practice and lessons learned.

47. A quantitative assessment of the baseline and incremental activities and costs will be undertaken during the PDF B. Cofinancing from government and other partners will be sought to cover the costs of full project activities that will generate primarily domestic benefits. Initial contacts have been made with donors for potential co-funding including Austrian, Swedish and Swiss agencies. In addition, the proposal is currently registered in the Field Programme Development Service of FAO, which will actively assist in seeking funds for the implementation of the full size project activities.

VI. LINKAGES WITH OTHER GEF AND NON-GEF INTERVENTIONS

48. In addition to FAO's on-going work on conservation and sustainable use of pollinators (e.g. the development of case studies), under FAO's Priority Areas for Inter-disciplinary Action on Integrated Management of Biological Diversity for Food and Agriculture, priorities include agricultural production and ecosystem services arising from agricultural biodiversity. There are clear links with FAO's wide range of activities on the conservation of biological diversity, natural resources management, and sustainable agriculture. These include, among others, the programme on natural resources management particularly on crops and farming systems; FAO's work in support of the Convention on Biological Diversity, and more specifically the CBD Programme of Work on Agricultural Biodiversity. FAO's work is also linked to pollinator issues through the Integrated Pest Management (IPM) programme, and assisting in the implementation of the African Pollinators Initiative (API). Hence, the pollinator project will benefit from the ongoing work at FAO, the full range of technical expertise of FAO staff, the wealth of experiences and lessons learned from past activities, and the FAO's overall institutional capacity and access to networks.

49. International awareness with regards to pollinator biodiversity conservation is relatively new, having begun with the Forgotten Pollinator Campaign in the USA, and Decision III/11 of the CBD, both in 1996. Other major biodiversity issues, such as alien invasive species, have been priority activities of national and international organisations for more than 30 years. The rapid development of the International Pollinator Initiative's (IPI) has been due to using existing organisations and their capacities to achieve its objectives. FAO has played a central role in the global co-ordination of the IPI and the proposed project builds on the existing structures and co-ordination mechanisms of the IPI.

50. The UNDP GEF project, "Biodiversity Conservation for Invertebrates" (South Africa), and the UNEP GEF project "Conservation of Graminae and Associated Arthropods for Sustainable Agricultural Development in Africa" will have some relevance to the proposed project. During the PDF-B phase, full project activities will be designed to link with these initiatives as appropriate. However, given that little attention has been specifically paid to pollinators in other GEF-funded projects to date, it is unlikely that there will be much overlap or duplication in these or other projects.

51. In May 2003, a global workshop funded by the Government of the USA and hosted in South Africa (by the API) will be held on pollinator conservation for policy makers. FAO, API, BPI and ICIMOD are all participants at this workshop and the outputs of the workshop will be utilised as appropriate during the PDF-B stage.

VII. NATIONAL AND REGIONAL LEVEL SUPPORT

National Support

52. Commitment to sustainable resource management and agricultural biodiversity for the eight participating countries (Brazil, China, Ghana, India, Kenya, Nepal, and Pakistan) is reflected in their National Biodiversity Strategy and Action Plans (NBSAP). At a global level, country obligations to the IPI, as parties to the CBD, join in a common aim: "to promote co-ordinated action worldwide...[to] promote the conservation and the restoration and sustainable use of pollinator diversity in agriculture and related ecosystems" (UNEP/CBD/COP/5/5). In their First National Reports to the CBD, the following countries referenced their focus on agricultural biodiversity: Brazil, China, Kenya, Nepal, and South Africa. In their Second National Report to the CBD, China reported on case studies being undertaken on pollinators.

53. Brazil, through the Ministry of Environment, is committed to the conservation and sustainable use of pollinators. The Brazilian government hosted the Sao Paulo Workshop on Conservation and Sustainable Use of Pollinators in Agriculture, the results of which the Brazilian government presented to SBSSTA 5. The "Sao Paulo Declaration", as it is known, was the precursor of the IPI.

54. In China's NBSAP, under "Box 3.2: Criteria for Determining Global Biodiversity Significance and Conservation Priority of Species", pollinators are specified as significant " for maintaining conditions necessary for human welfare (e.g. in pollination…)".

55. India also specifically refers to pollinators in their NBSAP, in more than one context. The critical role of "natural pollinators" is recognised when discussing "The genetic poverty of modern agriculture"; and while discussing "Loss of wild relatives, market orientation" (Chapter 5).

56. In Pakistan's NBSAP, pollinators also are specifically mentioned: "Biodiversity provides free of charge services worth hundreds of billions of rupees every year that are crucial to the well-being of Pakistan's society. These services include clean water, pure air, *pollination*, soil formation and protection, crop pest control, and the provision of foods, fuel, fibres and drugs. As elsewhere, these services are not widely recognised, nor are they properly valued in economic, or even social terms. Reduction in biodiversity (including local extinction of species) affects these ecosystem services. The sustainability of ecosystems depends to a large extent on the buffering capacity provided by having a rich and healthy diversity of genes, species and habitats. In that respect, biological diversity is like economic diversity in a city; it is essential for long term survival and a sound investment in the future." (p.1) Invertebrate fauna are also mentioned when discussing habitat loss (forestry): "It is now feared that Pakistan is having the world's second highest rate of deforestation. This destruction is leading to the wholesale disappearance of trees, shrubs, and ground flora together with the vertebrate and invertebrate fauna they normally support. The loss of forest habitat has had a severe impact on Pakistan's biodiversity, and has serious implications for the nation's other natural and agro-ecosystems" (p.12).

57. In addition to their commitment to biodiversity, partner countries are also committed to pollinator issues as demonstrated by their involvement in the International Pollinator Initiative (IPI) (as parties to the CBD), and through the African Pollinator Initiative (API) and the Brazilian Pollinators Initiative (BPI).

58. Country agricultural development plans and environmental reports also make references to agrobiodiversity and pollinators. For example, Ghana's Comprehensive Development Framework – Natural Resources (1999) states that the major natural resource management problem and challenge in Ghana is land resource degradation and *loss of biodiversity* resulting from *inappropriate farming practices* and unsustainable harvesting levels…". The Strategic Plan for South African Agriculture states that "Central to this strategy is to preserve *agricultural biodiversity* ....". In the White Paper on the Conservation and Sustainable Use of South Africa's Biological Diversity, Chapter 3 ("Biodiversity Policy and Strategy for South Africa"), Goal 2, "Sectors that depend upon ecological processes and require natural habitats to be transformed" states that: "Less dependent upon the direct use of indigenous biological resources are activities such as cultivation and afforestation, which depend upon ecological processes - such as the generation of soils, *the pollination of crops,* or the control of pests - but which require that natural habitats be transformed."

Regional Support

59. Three key partners (International Centre for Integrated Mountain Development (ICIMOD - Asia), the African Pollinator Initiative (API - Africa), and the Brazilian Pollinator Initiative (BPI – Latin America) have been identified to collaborate in project implementation based not only on the interest they have expressed in actively participating in the development, design and implementation of the project, but also on criteria such as the pollinator biodiversity in the region, their institutional and outreach capacity, and their proven commitment to pollinator issues within the context of conserving agricultural biodiversity and promoting sustainable agriculture. Each partner organisation has preliminarily identified the key areas for project activities in their region and these activities will be further discussed and prioritised during the proposed workshops in order to focus activities and maximise available resources for the implementation of the priority activities. Other potential partners may be identified during PDF-B.

60. The African Pollinator Initiative, the African network of the IPI, is based on country participation and to date, boasts a network of 76 people in 15 countries including the project partner countries. Brazil's interest in pollinator issues is significant and is reflected for example in their role in the development of the Sao Paulo Declaration, from where the proposal that COP V establish an International Pollinator Initiative arose. ICIMOD, which undertakes significant work on pollinator issues in the Hindu-Kush Himalaya region, is composed of member countries (including China, India, Nepal and Pakistan). Partner institutions within these countries include governmental departments, research institutes, and universities, to name a few.

61. In November 2000, an FAO-funded workshop brought together a range of leading world experts on pollinators that led to the creation of the African Pollinators Initiative (API). At another recent workshop, sponsored by FAO and held in Nairobi, many countries had an opportunity to come together and discuss a regional approach to the IPI in Africa. Discussions revealed that Africa is host to a number of highly unique and specialised pollination systems, and pollination management in Africa must carefully consider the challenging environmental conditions of the continent and the adaptations that indigenous pollinators have made to this environment. Local case studies and research projects, technology in the use of alternative pollinators to the honey bee, monitoring programmes, training in pollinator identification, databases of pollinators and their host plants, distribution and nesting biology, and an information dissemination mechanism were identified as priority areas for action. API has been an active network since 1999 and has already received in-kind and locally generated cash resources to support its work. Apart from regional networking API is preparing a publication of case studies and its own plan of action, which will be published in 2003. API has also been very involved in networking globally with several members having participated in a number of congresses and workshops around the world. ELCI, a participating organisation of API, led the development for UNEP of a document entitled "Managing Agricultural Resources for Biodiversity Conservation", which included pollinator conservation. This document was an output of the GEF funded UNDP/UNEP Biodiversity Planning Support Programme.

62. The Brazilian Pollinators Initiative is a new initiative in the process of initial organisation. It results from discussions which started in October 1998 at the "International Workshop on the Conservation and Sustainable Use of Pollinators in Agriculture, with Emphasis on Bees" held at the University of So Paulo and promoted and organised by the Brazilian Ministry of the Environment in partnership with the University of So Paulo, the Brazilian Corporation for Agriculture Research – EMBRAPA and FAO. Subsequent discussions on the BPI were held during the "4th Brazilian Meeting on Bees" organised by the University of São Paulo in September 2000. Further discussion about the BPI took place at the "5th Brazilian Meeting on Bees" held in Ribeirão Preto, State of São Paulo, on September 2002. The BPI builds upon an extensive network of Brazilian experts on bee and pollination research, and institutions that provide laboratories, research teams, internet facilities, etc.

63. ICIMOD's mandate is "…to help promote the development of an economically and environmentally sound mountain ecosystem and to improve the living standards of mountain populations in the Hindu Kush-Himalayas." To date, studies conducted at ICIMOD indicate the importance of *Apis cerana* in small-scale mountain agriculture and documented various pollination practices in the mountains of Hindu Kush Himalayas. Priorities in the region include examination and documentation of non-traditional and unrecognised pollinators, the human dimensions of pollination (e.g., positive and negative attitudes of communities towards recognised pollinators), indigenous knowledge and the role of pollinator varieties.

VIII. SUSTAINABILITY AND REPLICABILITY

64. The project will be implemented by existing institutions (See Annex A), and will build upon their experience, knowledge and institutional capacity. The project will build capacity at institutional and individual levels, raise awareness, increase knowledge, and strengthen regional collaboration to ensure sustainability after the termination of project support.

65. The project is based on the collaboration of three regional partners: ICIMOD, the African Pollinator Initiative, and the Brazilian Pollinators Initiative. These entities are already active in the area of pollinators and will continue to involve their respective partners in the preparation of the proposal. Indeed, partners already have on-going activities on pollinator issues which involve extensive stakeholder participation, especially with (and for) farmers. API, for example, was brought to life through national funds, and is in the process of finalising its Plan of Action. ICIMOD focuses on finding sustainable options to the problems of mountain people and their environments. The BPI is built upon several components: a) an extensive network of Brazilian experts on bee and pollination research and of beekeepers associations: b) a world class network of agricultural research centres maintained by the Brazilian Corporation for Agriculture Research (EMBRAPA); and c) a host of potential partnerships within governmental and non-governmental organisations working in the field of sustainable agriculture and biodiversity. Probably the most important aspect of ensuring project sustainability is that partner organisations are already involved in pollinator conservation and already invest their own resources (financial and human) into pollinator conservation and sustainable use. Partner organisations also receive support from international institutions, universities, etc., which also invest resources in this area.

66. The major stakeholders that are relevant to the implementation and achievement of project objectives can be identified at the local, national and international levels. For instance, at the local level, the major stakeholders are the farmers (including local and indigenous communities). Farmers will play a key role as they will be responsible for implementing pollinator-friendly best management practices at the field level. At the national level, major stakeholders are policy makers from a cross-sectoral spectrum, especially agriculture and environment, as well as research entities, national farmer associations, national NGOs and agri-businesses. Policy makers will play a major role, especially for mainstreaming pollinator issues into sectoral and cross-sectoral policies, and into, *inter alia*, national legislation and action plans. Research entities will contribute to bring forward the improvement of local taxonomic information, and assist in enhancing and standardizing identification keys and “current status and monitoring” tools and techniques. At the international level, FAO and permanent members of the ISC (including partner countries) will implement the project, while other institutions, such as IUCN, ICPBR and others (COP decision V/5) will be invited as appropriate for expert advice. The CBD will also be kept informed.

67. Sustainability will also be achieved by mainstreaming project activities into the normative work of partners and other stakeholders. For example, EMBRAPA (BPI), aims to integrate a training agenda into their work programme and thus mainstream project outcomes into their normative work. The project will consolidate and build upon existing efforts by partners and other entities involved in the conservation and sustainable use of pollinators, but also sustainable agriculture. Furthermore, it is expected that benefits and income generated to local communities and farmers when managing and conserving pollinators will contribute to the sustainability of the project.

68. Sustainability of this project will rely heavily on stakeholder involvement at all stages in the project development and implementation process. Participation at all stages of the process not only gives ownership of the project and activities, but also is integral to sustained capacity building, awareness raising and technical capacity strengthening through knowledge of both project processes and also at the technical level (i.e. technical aspects of best management practices, capacity building, enabling environment issues, and so forth).

69. Replicability is central to many of the project outputs and outcomes. The project will develop standardised methodologies for monitoring pollinator populations and during project implementation the different methodologies will be tested in different agro-ecological systems, and the results disseminated globally and regionally. Global, regional and national-level information exchange and dissemination of results from the demonstration sites is one of the primary objectives of the project.

70. The proposed Full-size Project will demonstrate pollinator conservation and management in different ecotypes through pilot demonstration sites. The design of site-based interventions will be strongly informed by the feasibility of applying demonstrated management practices in a variety of situations. Applicability and replicability will be primary evaluation criteria.

71. In addition to strong bi-lateral partnerships that already exist, new partnerships with recognised institutions/entities (such as universities, NGOs) will be established during the course of the PDF-B. This will help ensure the widest dissemination possible of research outputs at the regional and international levels. The potential for partners to assist with dissemination and replication of results will be evaluated as part of the partnership identification, evaluation and development process. At the international level, as an intergovernmental body, FAO will facilitate the promotion of sustainable agricultural practices in different fora to its member constituencies (such as Ministries of Agriculture).

IX. DESCRIPTION OF PDF B ACTIVITIES

72. The PDF Block B grant will provide US$700,000 (out of a total project development cost of US$1,645,000) to support the six associated activities that will enable formulation of the full GEF project. The entire duration of the PDF-B phase will be

24 months and the major output will be a full-size project proposal, which will build upon the completion of components one-five that are described below. Implementation of the PDF B and the full project will be done in collaboration with three partners (ICIMOD - Asia, African Pollinator Initiative – Africa, and the Brazilian Pollinators Initiative). A series of regional and international workshops will be held to assist in defining priority areas for action, initiate collaboration within regions, and outline a programme of work for the full-size project. Annex A describes the PDF B implementation arrangements.

73. The main objective of the proposed PDF-B is to undertake the necessary reviews and consultations to design the full-size Project. The PDF B will have six components: Component One: Project management and co-ordination, Component Two: Stocktaking of current status of pollinators, Component Three: Demonstration sites and replication strategies, Component Four: Capacity building and awareness raising, Component Five: Development of implementation strategies for the full size project and mobilisation of cofinancing, and Component Six: Development of a full-size GEF project proposal.

74. Component One: Project management and co-ordination. Prior to commencing the PDF-B activities, a number of mechanisms will be established to facilitate international and regional co-ordination.

75. At the global level, an International Steering Committee (ISC) will be formed to steer the project. The ISC will be composed of a core group including the lead person responsible for project implementation of each partner (i.e. API, BPI, and ICIMOD); FAO, UNEP; and the International Project Co-ordinator. If, during the ISC meetings, it is agreed by all partners that the membership should be extended (for example to include donors or other technical institutions) then that would be considered. The role of the ISC is to act as the main "governing body" of the global project. Members of the ISC will be responsible for representing their partner institution at the technical and administrative levels. The ISC will also be responsible for, *inter alia*:
    a. approving a plan of action for the implementation of the PDF-B;
    b. approving TORs for consultancies;
    c. approving documentation (e.g. standardised methodologies);
    d. approving criteria for the identification and selection of demonstration sites;
    e. approving strategies for communication, partnerships and resource mobilisation; and
    f. providing guidance to the International Project Co-ordinator.

76. Under the guidance of FAO, an International Project Co-ordinator will be selected to co-ordinate activities and oversee the implementation of the PDF-B. The International Project Co-ordinator will be responsible for ensuring information dissemination and communication between all partners and will be the focal point for the development of all project strategies.

77. Regional co-ordination will be the responsibility of regional partners and will be accomplished through electronic communications and regional workshops. Partners will be responsible for the design of activities in their region, and appropriate co-ordination and communication mechanisms for each region will also be established and then discussed at the ISC. Facilitating information flow amongst regional partners will be an important function of the overall international co-ordination mechanism and FAO will take the lead in this regard.

78. Component Two: Stocktaking of current status of pollinators. Each region will co-ordinate their preliminary subject reviews which will feed into the overall design of the project. Preliminary subject reviews will assess (in different areas/habitats/regions) the status, habits and interactions of pollinators, reasons for pollinator decline, local management practices and traditional knowledge, and the enabling environment (market incentives, policy frameworks, capacity, etc). Each regional partner will also review current on-going activities and collect baseline data on related initiatives, current knowledge on pollinator conservation and sustainable use, existing databases and other information networks. Study papers on these issues will be produced and inform the project development process.

79. The stocktaking exercise will also include the (i) identification of the physical areas (agro-ecosystems, natural ecosystems) for locating demonstration sites and the target pollinator populations/indigenous populations/pollinator-plant interactions to be analysed for best management practices; (ii) development of information tools and techniques (such as databases); and (ii) identification of policy and other enabling environment barriers that impact on the conservation and sustainable use of pollinators, and development of a strategy to overcome the barriers.

80. After the stocktaking exercise is complete, each regional partner will conduct a gap analysis to identify critical issues to be addressed within the full-size project. The analysis of information collected through this activity will contribute to the identification, development, and specification of Full-size Project activities.

81. Component Three: Demonstration sites and replication strategies. Preliminary identification of priority project areas for demonstration sites and countries for pilot activities in the Full-size Project will entail identifying “pollinator hotspots” and areas where pollinator management will improve food production and security. Some demonstration sites already exist (for example on-going work of ICIMOD in the Hindu-Kush Himalaya region), and these would also be used when appropriate. During the PDF-B phase, project partners will develop draft criteria in collaboration with key stakeholders (in particular farmers, farmer organisation, NGOs) for the identification of demonstration sites using the analysis conducted during the “stocktaking” component two of the PDF-B as well as other sources of information such as case studies. Each region’s draft set of criteria will be discussed and integrated with those of the other regional partners and approved by the ISC. Subsequently, and based on the identified criteria, sites will be identified for further development during the full-size project.

82. Component Four: Capacity Building and Awareness Raising. This PDF-B activity will build the basis for Full-size Project activities dealing with awareness raising, capacity building, and sharing of experiences and dissemination of results. Workshops attended by local, national and international experts will serve as the vehicle to execute this component.

83. Based on training need assessments that identify stakeholders that that require capacity building assistance and technical areas where capacity needs to be built/strengthened, experts will develop training materials, manuals and course outlines for capacity building that are part of a comprehensive capacity building strategy for the project.

84. The awareness raising strategy will involve the identification of groups to target for awareness raising and subsequently the design of awareness raising activities for the appropriate stakeholder group. Communication experts will develop a strategy for awareness raising activities that includes different media/events (such as radio, television, local community events, site visits, illustrated fun books for school children, etc.), and initiate the development of these methodologies (i.e. contact local radio stations, schools, and so forth).

85. Sharing of experiences and dissemination of information will include, but not be limited to, a project website that will also have links to other sources of information on pollinators, and possibly information such as a roster of experts, and links to technical databases (e.g. taxonomic). Another possibility will be to have a list server where experts and other interested parties can post messages on a message board. Design of the website and listserv will be developed during the PDF B. In addition, a non web-based complementary dissemination strategy will be designed to ensure dissemination to the "non-wired" stakeholders and to support outreach from the demonstration sties and replication strategies.

86. Component Five: Development of implementation strategies for the full size project and mobilisation of cofinancing. Under the guidance of FAO and partners, the International Project Co-ordinator will develop implementation strategies (including a stakeholder participation and monitoring and evaluation plan) for the full size project and secure necessary co-financing. Securing co-financing will include consultations with stakeholders and potential funding sources especially international, regional and national institutions concerned with the project. Contacts have already been initiated with potential donors and partners. Regional partners will play a major role in identifying partners at the regional levels. The strategies will be developed under the overall responsibility of the International Project Co-ordinator who will finalise these with the members of the ISC.

87. Component Six: Development of a full-size project proposal. A full size GEF project proposal will be developed according to current GEF standards and requirements. The overall responsibility for the development of the full-size project proposal will lie

with FAO, and, more specifically, the International Project Co-ordinator. The full-size project proposal will be developed through a global collaborative effort and extensive participation of partners. As the document is developed, components pertinent to the relevant partner organisations will be discussed through their networks and during their regional workshops. Project components that relate to partner activities will be prepared by the partner organisations and the International Project Co-ordinator will integrate these into the main project proposal. ISC members will be continually updated with drafts of all pertinent documentation relevant to the development of the main document.

X. PDF-B OUTPUTS

88. The full-size GEF project proposal (Component 6) will be formulated in accordance with the latest GEF guidelines through a process involving full participation of all co-operating partners, including co-financiers identified through the resource mobilisation process (Component 5). The project proposal will incorporate the following outputs of the PDF-B:

- Established steering groups and co-ordination mechanisms for the project *(Component 1)*
- *Studies:* Review of the state of pollinators, the reasons for the decline in population size, the interactions between pollinators and agricultural areas, and the enabling environment *(Component 2)*;
- Baseline data and information on related initiatives *(Component 2)*;
- *Studies*: Review of current knowledge and activities in pollinator conservation and sustainable use *(Component 2;)*
- Identification of critical gaps in information on critical issues (such as the linkages between agricultural land and pollinator nesting habitats; key producers of pollination services, technology for the management of pollinators other than honey bees, training needs, extension methodologies, tools for monitoring, barriers and constraints inherent to the enabling environment etc.) *(Component 2)*;
- Design criteria and priority areas for the establishment of demonstration sites *(Component 3);*
- Identified demonstration sites and preliminary activities for each demonstration site*(Component 3);*
- Development of a website and other information dissemination tools (*Component 4);*
- Proceedings and syntheses of workshops and consultations *(where applicable, mainly Component 1)*;
- Stakeholder participation plan *(Component 5);*
- Mobilised donors and a financial plan *(Component 5)*;
- A monitoring and evaluation plan *(Component 5)*;
- Full size GEF project proposal, including the full results and experiences of the PDF-B stage *(Component 6).*

XI. ITEMS TO BE FINANCED BY THE PDF B (US$) AND PRELIMINARY WORK PLAN

ACTIVITY	GEF US$	FAO US$	API US$	ICIMOD US$	BPI US$	FAO In kind	API In kind	ICIMOD In kind	BPI In kind	Total
CO-ORDINATION AND PROJECT MANAGEMENT	172,000	0	0	22,000	0	65,000	40,000	50,000	80,000	429,000
STOCKTAKING OF CURRENT STATUS OF POLLINATORS	37,000	117,500	0	0	0	40,000	5,000	10,000	36,000	245,500
DEMONSTRATION SITES, OUTREACH AND REPLICATION STRATEGIES	161,000	17,500	0	0	0	25,000	10,000	10,000	15,000	238,500
CAPACITY BUILDING AND AWARENESS RAISING	172,000	0	0	3,000	30,000	25,000	5,000	25,000	20,000	280,000
IMPLEMENTATION STRATEGIES FOR THE FSP AND RESOURCE MOBILIZATION	106,000	0	0	4,000	36,000	47,000	15,000	10,000	50,000	268,000
PROJECT DEVELOPMENT	52,000	0	0	0	0	20,000	40,000	5,000	12,000	129,000
Administrative support	0	0	0	5,000	0	20,000	10,000	10,000	10,000	55,000
PDF-B TOTAL	**700,000**	**135,000 ***	**0**	**34,000**	**66,000**	**242,000**	**125,000**	**120,000**	**223,000**	**1,645, 000**

* On-going Letters of Agreement with each partner.

PDF-B Workplan

Activities:																								
MONTH	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**2**	**2**	**2**	**2**	**2**
PROJECT STEEERING COMMITTEE MEETINGS	x			x						x						x							x	
STOCKTAKING OF CURRENT STATUS OF POLLINATORS	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=
DEMONSTRATION SITES, OUTREACH AND REPLICATION STRATEGIES	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=
CAPACITY BUILDING AND AWARENESS RAISING		x		x						x						x								x
IMPLEMENTATION STRATEGIES FOR THE FSP AND RESOURCE MOBILISATION	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=
PREPARATION OF FULL SIZE PROJECT PROPOSAL							=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=
ADMINISTRATIVE AND MANAGEMENT SUPPORT	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=

X: major deliverable =: ongoing activity

Annex A. PDF B Implementation Arrangements

FAO

FAO will provide the overall co-ordination and technical backstopping of the proposed global project. Regional level co-ordination will be organised by the partners (i.e. API, BPI and ICIMOD) and is outlined below. Consistency, specificity and facilitation of initiatives between regions, and between the regional co-ordinators will be undertaken by FAO. In addition, FAO will facilitate and ensure the sharing and flow of information and linkages, internationally, among and between regions, but also linking the proposed project activities with other major on-going initiatives (such as the Global Taxonomy Initiative). An international coordinator, under the overall responsibility and direct supervision of FAO, will be responsible for the overall coordination and effective implementation of the project activities.

In addition to ensuring linkages and information-flow between partners, FAO will ensure global co-ordination of the proposed project by providing technical assistance to partners, hosting international-level workshops, co-ordinating meetings of the International Steering Committee, visiting/evaluating specified sites of importance, and participating in regional meetings.

AFRICA: African Pollinator Initiative (API)

API will work through three lead partners, each with unique specialist capacity needed for the success of the proposed project, that will be developed into regional focal points for expertise and extension for key aspects of the initiative. From these, capacity will be built during and after the GEF funded project in national centres of excellence.

Lead organisations:
Agriculture Research Council-Plant Protection Research Institute (ARC-PPRI), South Africa.
Environment Liaison Centre International (ELCI), Kenya.
International Centre for Insect Physiology and Ecology (ICIPE), Kenya.

Participating countries and organisations (this could change during the development of the project):
Ghana: University of the Cape Coast.
Kenya: Kenya Museums of Kenya, University of Nairobi, University of Jomo Kenyatta, Nature Kenya.
South Africa: Gauteng Provincial Administration, National Botanical Institute.

API Co-ordination mechanisms and activities

Communication (networking). API was established as a network for implementing the IPI in Africa. This network uses the BioNET-International structure, has a Steering Committee, African representatives, a scientific officer, a Secretariat (at ELCI), a web-site and an electronic newsletter (PollenBytes).

Secretariat. ELCI will administer GEF and other funds, and distribute these among the API participants, develop and maintain the web page, undertake fund raising and general co-ordination matters.

Focal points for expertise and extension to national centres of excellence will be:

Building a knowledge base. This activity will be undertaken by different organisations of the API. For example, assessment in capacity building will be undertaken by ARC-PPRI and assessment and examination of conservation and restoration activities will be lead by ICIPE.

Capacity development. ARC-PPRI: will lead the capacity development functions of the initiative, through its active involvement in the BioNET-International network for Africa (including SAFRINET, EAFRINET, WAFRINET and the newly formed NAFRINET).

Conservation and Restoration. ICIPE will take the lead in developing a research and extension programme in pollination as a keystone ecosystem service in agro-ecosystems and natural ecosystems; in documenting the resource needs in these systems to permit the persistence of pollinators in areas under development; in assessing the economic contribution of pollination ecosystem services; and in identifying agro-ecosystem pollinator-friendly management.

Public Education and Awareness/mainstreaming. ELCI will assist national partners to develop and spearhead public awareness and undertake policy analysis and advocacy for change.

ASIA: ICIMOD

ICIMOD, in collaboration with its partners from China, India, Nepal and Pakistan, will execute the project activities. ICIMOD will host the project and provide administrative and organisational support to the project. The following institutions from collaborative partner countries will join in the process of project implementation:

Chengdu Institute of Biology, China
Eastern Bee Research Institute, Kunming, China
Kunming Institute of Botany, China
Y.S. Parmar University of Horticulture and Forestry, India
CSK Himachal Pradesh Agriculture University, India

G. B. Plant Institute of Himalayan Environment and Development, India
Honeybee Research Institute, Islamabad, Pakistan
Commonwealth Institute of Biological Control, Islamabad, Pakistan
Pakistan Agriculture Research Council, Islamabad, Pakistan
Ministry of Agriculture, HMG, Nepal
Ministry of Environment, HMG, Nepal
Annapurna Beekeeping and Environment Promotion, Kaski, Nepal

BRAZIL: Brazilian Pollinators Initiative (BPI)

The BPI builds upon an extensive network of Brazilian experts on bee and pollination research, an extensive network of beekeepers associations, and a world class network of agricultural research centres maintained by the Brazilian Corporation for Agriculture Research – EMBRAPA, and a 50-year track-record of excellence in research and graduate education on bees at the University of São Paulo. The Brazilian Ministry of the Environment and a host of potential partnerships within governmental and non-governmental organisations involved with sustainable agriculture are also part of this network.

Lead Organisations:

USP – University of São Paulo, the leading university in Brazil, which harbours two internationally recognised centres of excellence on bee research and training (at the cities of São Paulo and Ribeirão Preto) and a world class School of Agriculture (ESALQ).

EMBRAPA - Brazilian Corporation for Agriculture Research – EMBRAPA, the leading tropical agriculture research organisation in the world which maintains a world class network of over 40 agricultural research centers and is responsible, in partnerships with Brazilian universities, for about 10% of all scientific publications on agriculture world-wide.

MMA – Brazilian Ministry of the Environment, which co-ordinates the National System/Network of Environmental Organisations (SISNAMA), co-ordinates the National Biodiversity Policy and the National Biodiversity Program (PRONABIO), being the national technical focal point to the Convention on Biological Diversity, and which co-ordinates, in partnership with the Ministry of Education, the National Program for Environmental Education.

BPI Co-ordination Mechanism and Focal-Points for PDF-B:

Steering Committee:
Vera Lucia Imperatriz Fonseca, USP, Lionel Segui Gonçalves, USP, Clayton Campanhola, EMBRAPA, Afonso Valois, EMBRAPA, Braulio Ferreira de Souza Dias, MMA, Marina Siqueira Castro, EBDA - Bahia Agriculture Development Company, Fernando Silveira, UFMG – Federal University of Minas Gerais, Breno Freitas, UFC – Federal University of Ceará.

Secretariat (options under discussion for administration of BPI and GEF funds):
USP & University of São Paulo Foundation (FUSP), São Paulo
EMBRAPA & Inter-American Institute for Agricultural Co-operation (IICA) Brazil Office, Brasilia
MMA & FAO Brazil Office, Brasilia

Communication: Supporting Networks: to be determined

Supporting Websites:

Discussion List on Brazilian Bees: www.bdt.org.br/listas/beebr/
USP Bee lab: eco.ib.usp.br/beelab/

Supporting National Meetings: Brazilian Meetings on Bees (biennial)

Structure and Focal Points (leading institution):
Assessments: USP & EMBRAPA
Adaptive management: EMBRAPA
Capacity Building: USP
Mainstreaming: MMA