(According to UNEP this is a terminal evaluation of the 1st tranche)
Mid-Term Evaluation
of the project
Conservation and Sustainable Management of Below- Ground Biodiversity (BGBD)
GF/2715-02-02-4517, 1st Tranche

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EXECUTIVE SUMMARY

General

1. On August 1, 2002, the Project Document was signed, marking the official start of the project "conservation and sustainable maFnagement of below-ground biodiversity" with the acronym CSM-BGBD. The project is generally referred to as the BGBD project, and has a lifespan of 5 years. The Project Objective is '*to enhance awareness, knowledge and understanding of below-ground biological diversity important to sustainable agricultural production in tropical landscapes by the demonstration of methods for conservation and sustainable management'*. Project Components include:
   1) Internationally accepted standard methods for characterization and evaluation of BGBD, including a set of indicators for BGBD loss.
   2) (a) Inventory and evaluation of BGBD in benchmark sites representing a range of globally significant ecosystems and land uses; and (b) developing a global information exchange network for BGBD.
   3) Sustainable and replicable management practices for BGBD conservation identified and implemented in pilot demonstration sites in representative tropical forest landscapes in seven countries.
   4) Recommendations of alternative land use practices and an advisory support system for policies that will enhance the conservation of BGBD.
   5) Improved capacity of all relevant institutions and stakeholders to implement conservation management of BGBD in a sustainable and efficient manner.

2. Full project cost is US$ 25,971,124, of which US$ 14,022,646 is earmarked for the first tranche of the project, which is evaluated in this report. A total of US$ 5,022,646 is GEF funding for the first tranche, whereas US$ 9,000,000 is drawn from co-financing sources. The project is implemented through 7 national BGBD teams, led by Country Programme Convenors (CPC), and under the responsibility of TSBF-CIAT in Nairobi, which is the International Executing Agency. Project activities are spearheaded by four thematic Working Groups (WG) that operate across countries, and are also led by a Convenor. Overall project supervision is provided by the Project Advisory Committee (PAC), which is comprised of one representative from each pilot country and representatives from international organizations working on the interface between agriculture and environment. The Project Steering Committee (PSC) has overall responsibility for implementation and execution of the project, and includes the Global Coordinator, the project's Task Manager from UNEP/GEF, the Director of TSBF-CIAT and the Country Programme Conveners. The Global Coordinator is based at TSBF-CIAT headquarters in Nairobi and is supported for administrative, financial and information management services, together constituting the Global Coordinating Office (GCO).

3. The current mid-term evaluation assesses aspects of Execution Performance, Outputs, and Impact of BGBD half-way through its lifespan. The findings are based on a scrutiny of documents, visits to and interactions with BGBD country teams in Kenya, Uganda, and Indonesia, working sessions during the Annual Meeting in Manaus, Brazil (11-16 April, 2005), and interviews with the BGBD country teams from Brazil, Côte d'Ivoire, India, and Mexico. The evaluation pertains solely to the first tranche of the BGBD project. The Project Document, however, covers the entire lifespan of the project as it was initially not intended that it be split into two tranches. A number of important monitoring and evaluation tools were provided to the project after the inception of the project. Because of delays in the early stages of the project, the

duration of the first tranche was extended by six months to last 3 years, coming to a close at the end of June, 2005.

Findings

4. The project started off on at a slow pace, given the fact that conceptualization started as early as 1996. After project approval (August 2002), the final Memoranda of Agreement with convening country institutes were signed by January 2003, whereas institutional developments and Global Office appointments at the Executing Agency further delayed the full inception of BGBD. As a consequence, output in 2003 fell short of expectations, but after a 'come back' in 2004, performance improved markedly at all levels. An agreed extension of the first tranche by 6 months, led to a shared feeling of satisfaction among participants at the Annual Meeting 2005, the first event in the project where a plethora of country data were presented, compared and discussed among participants.

5. At the time of evaluation (Annual Meeting-2005 by mid-April), approximately 65% of the expected outputs and activities had been realized. It is anticipated that by the end of the first tranche, this will be 70%. The most important outputs of the first tranche are clearly linked to the inventory of below-ground biodiversity, and more specifically, the different functional groups. Major impact, in the sense that 'change' is visible and quantifiable, is modest, but can not be realistically expected after 2,5 to 3 years of inventory-dominated project activities. Chances of impact being realized in the course of and after the second tranche are however clearly visible. Overall visibility of BGBD at (inter)national level and, as a corollary, opportunities for enhanced sustainability needs increased attention.

6. Activities during the first tranche were dominated by field sampling and laboratory analysis. Direct involvement of stakeholders had therefore been limited to research and development partners in BGBD and parties that were interested in BGBD from the start or through sensitization workshops. Brazil and Mexico made the greatest efforts to involve farmer groups right from the start. Country teams generally expressed good levels of ownership. Positive aspects mentioned by members were their own scientific drive, the ability to make use of their specialized expertise, and the ability to interact and compare results with other institutions within as well as between countries.

7. Staffing at the GCO is modest, and has led to periods of crisis management, lack of time to provide real scientific leadership, and 'hick-ups' in communication. Composition of country teams range from those strongly centered around the convening centre, to those being constituted of a broad mosaic of national expertise. CPCs spent between 10 and 85% of their time on BGBD. Satisfaction at country level was highest when the CPC invested at least 50% of his/her time on BGBD.

8. Working Groups (topical management) operated along a matrix structure across country teams (national management), but had no funds and no real 'pushing power', which goes against the fact that the Global Workplan uses Working Groups as main entry points. Emphasis in the first tranche has been largely been focused on the work to be done under WG 1 and 2. Although the Global Workplan shows a range of activities to be undertaken under WG 3 and 4, they seemed to have received less attention during the first tranche. Lastly, WG 1 was convened by the Brazil CPC and WG 2 by the Global Coordinator, implying that these convenors wore 'two hats'. Although it does not seem to have negatively affected progress at all, from a management viewpoint it would be better not to have such dual roles.

9. Seventy-five percent of GEF funds were spent by the end of 2004 (minus the amounts still in pocket at country level). Total co-financing received at the end of the first tranche was equivalent to 48% of the co-financing committed for the entire project (tranche I & tranche II) and to 86% of the co-financing "planned" for the first tranche. GEF Council approved the co-financing for the entire project, not specific amounts for each tranche. The distribution of co-financing was estimated *pro rata*, based on the anticipated tranching of GEF funds Planning and expenditure at the level of GCO was quite satisfactory with proper stewardship, keeping expenditure close to budget. Workplans and budgets at country levels were not linked, allowing too high a level of *ad hoc* budgetting and spending.

10. At Global Coordinating Office level, Annual Reports show good use of Monitoring & Evaluation (M&E) tools, providing overall indications of progress. Most country teams had limited experience in using M&E tools but appreciated their value, allowing these tools to be further mainstreamed during the second tranche of BGBD.

11. At the time of evaluation, BGBD is in good shape. Although implementation was sluggish in the beginning, the rate of progress has increased rapidly, with a series of major outputs presented during the Annual Meeting in Manaus. The main asset of the first tranche is clearly in the inventory of below-ground biodiversity, and more specifically, the different functional groups. A major added value is the fact that these inventories were performed along a series of agreed-on common methodologies, which strongly enhances chances for high sustainability and replicability. Now that documentation and interpretation is ongoing, it seems 'harvest time' is approaching. In this respect, data sharing constraints have to be handled in the effectively to capture opportunities for early and possibly major impact, if, for example, a cross-cutting paper can be accepted by a leading journal. Completion of the inventory will most likely add immensely to the existing body of knowledge on BGBD, as hypothesized in the Project Document, and it may even provide insights not anticipated when the project was formulated.

12. As the first tranche progressed, it became clear that the 7 countries differ considerably in terms of; physical and human capacity, in realizing of leverage, e.g., by recruiting students and, as a consequence, in capability to deliver outputs according to plan and of sufficient quality. The latter was particularly noticeable at the level of mesofauna and microfauna characterization, where the 'more advanced' countries had a strong comparative advantage.

13. Annual Meetings turned out to be catalysts of output, as they serve as deadlines at the same time. The multi-country approach further helped in getting the best out of people, as no country wanted to appear to lag behind the others. On top of that, the approach created solidarity between countries, and willingness to train each other. Lastly, and perhaps to be better exploited in the second tranche when it is more relevant, 'best practices' in one country on BGBD management may well be tested in others. Bright ideas and innovative ways to establish trade-offs between agricultural use and ecosystem conservation should be actively exchanged and mutual experiences shared. In this way, the whole can become more than the sum of 7 countries.

14. Much of the more applied, farmer-managed and awareness-raising activities at policy level are only meaningful when outputs from the first tranche are on the table. In fact, the work completed in the first tranche raises many additional challenging R&D opportunities in the field of soil organic matter and nutrient dynamics, composting, biofertilizer development and use, bioremediation, sustainable farming by cashing in on (interactions between) functional groups at different trophic levels (e.g., biological control of nematodes), fixation of atmospheric

N, solubilization of soil P, different, yet to be properly valued, ecosystem services, and even bioprospecting.

Recommendations

Based on the Findings in this Report, and given the currently strong momentum achieved in the first tranche, the Evaluation Team recommends that the second tranche be financed and implemented according to plan, taking into consideration the following specific recommendations.

15. TSBF-CIAT exhibits a clearer dual leadership in the second tranche, i.e., both on Substance (GC-S; research, development, publications), and on Technical matters (GC-T: reporting, financial aspects, M&E, capacity building, baselines, incremental costs, global benefits, impact, sustainability); and TSBF-CIAT takes concrete steps to improve communication inside GCO and between GCO and Country Teams. CIAT Financial Office informs Country Teams instantly when transfers have been effected.

16. Working Groups and the (already defunct) Technical Advisory Group are not maintained as a mechanism to get the work done. Instead, TSBF-CIAT manages a Consulting Fund to help realizing important cross-cutting outputs and outcomes. The consultants work on a specific ToR that stipulates clear and tangible outputs to be realized in a limited timeframe.

17. CPCs spend at least 50% of their time on BGBD. If this can not be realized, the CPC should either step down and support BGBD from the sideline, or hand over most responsibilities to a to-be-appointed deputy, who at least handles financial matters, monitors progress, and prepares for Annual Meetings.

18. CPCs and Country Teams implement a proper expertise needs assessment (baseline) for the second tranche, and open the doors for broader partnerships as the foci of activities change. The project moves from inventory of functional groups to demonstration, 'best practices', and influencing policy. The host institutions from the first tranche maintain their lead role, but present a convincing team with new partners that are particularly capable of handling Outcomes 3 and 4. A protective attitude here will be counterproductive.

19. CPCs jointly prepare a strategy paper and plan of action during AM-06 on the added-value of being a global project, i.e., on how the whole can be made into more than the sum of the 7 parts, and on how to become more successful in realizing and enhancing impact, sustainability, stakeholder participation and country ownership.

20. GCO develops a proposal on how to assess 'global benefits and incremental costs' in second tranche. NPACs have a role to play here, by letting BGBD 'sink in' more profoundly in a country or region than the project itself can do. The role and impacts expected from NPACs should be spelled out more clearly, without aiming to bring all NPACs on one footing. Also, an exit-strategy should be made explicit during the early stages of the second tranche, showing how BGBD outcomes can be taken on board by CBD, MDGs, and other international R&D institutions, programs and conventions.

21. CPCs and Country teams further internalize M&E instruments in second tranche. Table 2 and 3 of the current M&E Plan are good starters, but Performance Indicators for Table 3 should be reviewed to become more quantifiable and realistic, particularly on 'alternative strategies promoted and adopted'. Also, with respect to the global information system, clearer performance indicators are needed to measure its impact.

22. GCO and CPCs develop a clear strategy and a code of conduct on (i) securing quality of outputs, (ii) data sharing, and (iii) publication of project outputs.

23. GCO clarifies how completion of the estimated 30% of currently unrealized first tranche output will or will not interfere with implementation of the second tranche (e.g. Outcomes 1.2, 1.3, parts of Outcome 3 and 4; write-ups of 1.1, 2.1, 2.2) and comments on whether or not Outcome 3 is in danger, now that 50% of its budget, i.e., US$ 1,238,646, seems to have been spent during the first tranche (see Table 3).

24. Financial statements by Country Teams in second tranche are consistent, and show relative exhaustion, periodic expenditure, and balance for each budget code. One should be able to link this information to workplans and achievements. Similarly, Workplans during the second tranche are organized according to Outcomes (level 1) and Activities (level 2), and can be linked to budgets and expenditure. UNEP/DGEF looks into mechanisms to better track co-financing and make it 'harder' (i.e. improve monitoring and accountability of co-financing).

I. Introduction and background

A. Project Identifiers

Project Number:	GF/2715-02
Project Name:	**"Conservation and Sustainable Management of Below-Ground Biodiversity".** *(Previous Title: Management of Agrobiodiversity for Sustainable Land Use and Global Environmental Benefits: MAGLUS)*
Duration:	5 years
Implementing Agency:	United Nations Environment Programme (UNEP)
Executing Agency:	**National Executing Agencies:** Brazil: Universidade Federal de Lavras Côte d'Ivoire: Université de Cocody (Abidjan) India: Jawaharlal Nehru University Indonesia: Universitas Lampung Kenya: University of Nairobi Mexico: Instituto de Ecologia, Xalapa Uganda: Makerere University **International Executing Agency** Tropical Soil Biology and Fertility Institute of CIAT
Participating Countries:	Brazil, Côte d'Ivoire, Indonesia, India, Kenya, Mexico, Uganda.
Eligibility:	Countries participating in this project have all ratified the Convention on Biological Diversity: Brazil-28 Feb 94; Côte d'Ivoire-29 Nov. 94; Indonesia-23 Aug. 94; India-5 June 92; Kenya-26 July 94; Mexico-11 March 93; Uganda-8 Sept. 93.
GEF Focal Area(s):	Biodiversity
GEF Programming Framework:	Operational Programmes 13 and 3

Project costs (US $):

GEF: Total Project : 9,029,770

Tranche One: Years 1-3 : 5,022,646
Tranche Two: Years 4-5 : 4,007,124

Co-financing:

	Country Baseline	: 8,023,676
	Country Project	: 4,833,678
	TSBF-CIAT Baseline	: 1,170,000
	TSBF-CIAT Project	: 2,605,000
PDF		
	GEF PDF-A	: 25,000
	GEF PDF-B	: 248,000
	TSBF	: 36,000

Full Project Cost : 25,971,124

Tranche 1 only : 14,022,646,

of which US$ 5,022,646 is GEF funding, and US$ 9,000,000 is co-financing.

B. Background

27. On August 1, 2002, the Project Document was signed by the UNEP representative as the implementing agency and the Director of TSBF, marking the official start of the project "conservation and sustainable management of below-ground biodiversity" with the acronym CSM-BGBD. The project is generally referred to as the BGBD project. It has a lifespan of 5 years, later subdivided into two tranches. During project preparation and afterwards, many stakeholder groups, including those from the seven participating countries in BGBD, were consulted, and several development organisations commented on earlier drafts. As a result, BGBD started off with a broad consensus on its perceived benefits, and with the backing and ownership of a large group of stakeholders.

28. The project was cleared for the December 2000 work program but was held back due to shortage of funds and then upon recommendation of GEFSEC was submitted as a 'tranched' project and cleared at the May 2001 work program. Although officially classified as 'tranched', the project better fits within the definition of 'tranched'. The Project Document approved by the Council does not contain specific goals to be achieved during each tranche or logframes for each tranche. The approved Project Document instead contains details for the entire project. Only GEF allocations to project outcomes are specified for each tranche.

29. The BGBD project is unique in the sense that below-ground biodiversity is inventoried simultaneously in seven tropical countries, using the same methods of inventory. In addition, scientific objectives are integrated with the practical objectives of demonstrating that benefits can be derived from management of the below-ground biodiversity.

30. The Project Objective is formulated in the Project Document as '*to enhance awareness, knowledge and understanding of below-ground biological diversity important to sustainable agricultural production in tropical landscapes by the demonstration of methods for conservation and sustainable management. The project will explore the hypothesis that, by appropriate management of above- and below-ground biota, optimal conservation of biodiversity for national and global benefits can be achieved in mosaics of land-uses at differing intensities of management and furthermore result in simultaneous gains in sustainable agricultural production.*'

31. Project Components are given in terms of Outcomes and include:

1) Internationally accepted standard methods for characterization and evaluation of BGBD, including a set of indicators for BGBD loss.
2) (a) Inventory and evaluation of BGBD in benchmark sites representing a range of globally significant ecosystems and land uses; and (b) developing a global information exchange network for BGBD.
3) Sustainable and replicable management practices for BGBD conservation identified and implemented in pilot demonstration sites in representative tropical forest landscapes in seven countries.
4) Recommendations of alternative land use practices and an advisory support system for policies that will enhance the conservation of BGBD.
5) Improved capacity of all relevant institutions and stakeholders to implement conservation management of BGBD in a sustainable and efficient manner.

32. Following GEFSEC requirements an M&E plan has been put in place since January 2004. The M&E plan was developed under the supervision of the UNEP Project Management Officer in

consultation with Global Project Coordinator and country partners. The M&E plan was approved by the Steering Committee at the Annual Review Meeting 2004 (AM-04).

33. GEF funds (Table 1) for the entire project period were apportioned more or less equally to participating countries. Table 2 shows the envisaged cash + in-kind co-financing contributions for the entire project period, showing a wide range between countries (between 277 and 1257 K$). Table 3 gives the impression of an approach divided into two period, but is rather a reflection of an implementation plan with a well-defined sequence of outputs and deliverables. Table 4 shows how GEF funds in the first tranche were apportioned to budget components. Almost 70% of GEF funds are spent at country programme level, and transferred by CIAT in six blocks on the basis of signed Memoranda of Agreement between CIAT and host institutes in the 7 countries.

Table 1. GEF funds allocated to GCO and countries per Project Outcome (entire lifetime of BGBD)

Component	**GEF**								
	Brazil	Cote d'Ivoire	India	Indonesia	Kenya	Mexico	Uganda	Global	**Total**
Outcome 1	105.000	103.490	105.000	105.000	106.686	104.900	110.000	401.609	1141.685
Outcome 2	306.500	296.995	306.250	306.000	311.168	304.700	310.000	680.830	2822.443
Outcome 3	262.500	254.990	262.500	262.000	266.715	263.6	255.000	649.986	2477.291
Outcome 4	70.000	68.000	70.000	72.000	71.124	70.100	70.000	372.093	863.317
Outcome 5	131.000	127.495	131.250	129.000	133.357	131.200	125.000	816.732	1725.034
Total	**875.000**	**850.970**	**875.000**	**874.000**	**889.050**	**874.500**	**870.000**	**2921.250**	**9029.770**

Table 2.Co-financing budgeted by GCO and countries per Project Outcome (entire lifetime of BGBD; baseline and PDF not shown)

Components	**Co-Financing**									**GEF and Cofinancing Total**
	Brazil	Cote d'Ivoire	India	Indonesia	Kenya	Mexico	Uganda	Global	**Total**	
Outcome 1	142.795	31.469	77.527	63.502	116.099	64.320	53.392	521.000	1070.106	2211.791
Outcome 2	372.575	82.109	202.281	165.688	302.921	167.822	139.308	521.000	1953.702	4776.145
Outcome 3	347.938	76.679	188.904	154.731	282.890	156.724	130.096	521.000	1858.962	4336.253
Outcome 4	228.020	50.251	123.798	101.403	185.391	102.709	85.258	521.000	1397.829	2261.146
Outcome 5	165.673	36.511	89.948	73.676	134.700	74.625	61.946	521.000	1158.079	2883.113
Total	**1257.000**	**277.020**	**682.458**	**559.000**	**1022.000**	**566.200**	**470.000**	**2605.000**	**7438.678**	**16468.448**

Table 3. Allocation of GEF Funds to Project Outcomes (entire lifetime of BGBD)

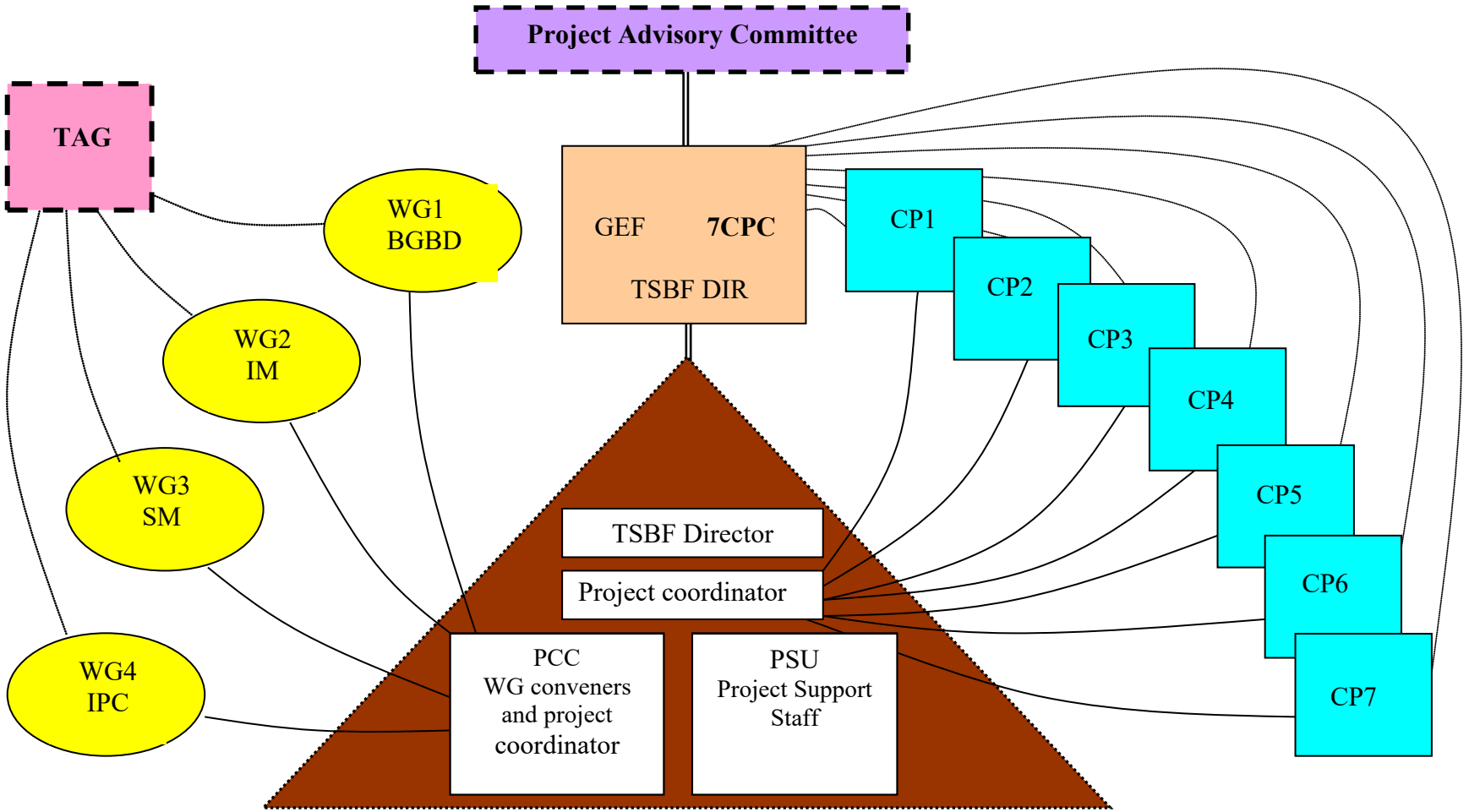
1st Tranche: Years 1-2		**2nd Tranche: Years 3-5**	
Outcome 1: 100%:	$ 1,141,685	Outcome 1: 0%	
Outcome 2: 60%:	$ 1,693,466	Outcome 2: 40%	$ 1,128,977
Outcome 3: 50%:	$ 1,238,646	Outcome 3: 50%	$ 1,238,646
Outcome 4: 10%:	$ 86,332	Outcome 4: 90%	$ 776,984
Outcome 5: 50%	$ 862,517	Outcome 5: 50%	$ 862,517
TOTAL	$ 5,022,646	TOTAL	$ 4,007,124

Table 4. Summary of the Project budget per component code (1st Tranche; GEF component)

Component	Budget (US $)
Project Personnel	901,121
Sub-contracts	3,470,366
Training	508,605
Equipment and Premises	74,328
Miscellaneous	68,226
Total	5,022,646

34. The project is implemented through seven country programmes (CPs), by a range of stakeholders, including government, research institutes and NGOs. Working groups (WGs), each linked to a major output of the project, and with representatives from each of the seven country programmes, provide scientific and technical inputs into the project while invited scientists from internationally recognized institutions advise the WGs on specialist technical matters. Overall project supervision is provided by the Project Advisory Committee (PAC). The PAC is comprised of one representative from each pilot country and representatives from international organizations working on the interface between agriculture and environment. The project, being executed under the responsibility of TSBF-CIAT, also reports to the Scientific Advisory Committee of TSBF-CIAT. The Project Steering Committee (PSC) has overall responsibility for implementation and execution of the project. The PSC includes the Global Coordinator (GC), the project's tTask Manager from UNEP/GEF, the Director of TSBF-CIAT and the Country Programme Conveners (CPC). The GC is based at TSBF-CIAT headquarters in Nairobi and is supported for administrative, financial and information management services, together constituting Global Coordination Office (GCO). The project organogram is shown in Figure 1.

Figure 1. BGBD Project Organogram.



Key to acronyms: TAG Technical Advisory Group; WG Working group; CP Country Programmes; CPC Country Programme Coordinator; PCC Project Coordinating Committee; PSU Project Support Unit; PSC Project Steering Committee; BGBD Below-Ground Biodiversity; IM Information Management; SM Sustainable Management; IPC Impact assessment, Policy recommendations and Capacity building

C. Evaluation objectives, methodology and limitations

35. The objective of the evaluation is to assess progress in implementing components/activities in the logframe of the project document scheduled for implementation during the first tranche of the project. The evaluation will assess, among other things;

i. **Execution performance:** Determination effectiveness and efficiency of project management and supervision of project activities.
ii. **Delivered outputs:** Assessment the project's success in producing each of the programmed outputs, both in quantity and quality as well as usefulness and timeliness.
iii. **Project impact.** Evaluation of the project's success in achieving its outcomes.

The evaluation is meant to provide a rigorous assessment of progress made so far with implementation of the BGBD project by establishing to what extent the project's objectives are being met and planned results obtained, taking into account the performance indicators listed in the project logframe, the extent to which project activities are completed and outputs are attained, particularly focusing on making recommendation for the effective and efficient implementation of the second tranche of the project; and to provide a detailed assessment of the various aspects of the project as spelled out in the Terms of Reference (Annex 1).

36. The Findings and Recommendations of the Evaluation Team are based on:

- Briefings at UNEP, and interviews at TSBF-CIAT (14-17 March)
- Working Sessions during the Annual Meeting in Brazil (11-16 April, 2005), from hereon referred to as AM-05
- Group Interviews with Country Teams from Brazil, Côte d'Ivoire, India, and Mexico
- Group Meetings with Working Group Convenors, and with Country Project Coordinators, and attending part of the meeting of PAC
- Visits to and detailed interviews with BGBD country teams, partners and other project stakeholders in Indonesia (Smaling), Kenya (Bekunda/Smaling), and Uganda (Bekunda)
- Joint output assessment with Country Teams using the monitoring and evaluation tools provided in the M&E plan 'Conservation and Sustainable Management of Below-Ground Biodiversity: Tranche I' (mainly Tables 2 and 3).
- A scrutiny of documents, including the approved Project Document, Semi-annual and Annual Project Progress Reports, Minutes and Reports of the Annual Meetings, Memoranda of Agreement, Budget and Expenditure sheets including co-financing overviews; Documents, papers, powerpoint presentations and proceedings showing output of project activities; and the Monitoring and Evaluation (M&E) Plan.

37. The current evaluation solely pertains to the first tranche of the BGBD project. The Project Document, however, covers the entire lifespan of the project as it was initially not intended to be split into two tranches. The project logframe, as a consequence, has restricted value for an evaluation at this point in time. The current evaluation deals with a 5-year project that is halfway, and that has so far had a strong focus on common methodology development, site selection, field sampling, inventory of BGBD and capacity building, and not yet on participatory technology development demonstration in the field, developing alternative land use systems, and on raising awareness, influence and sustainability at policy level.

38. A number of important monitoring and evaluation tools were 'retrofitted' to the project after the project had been approved. Table 2 in the M&E plan has been extensively used in this evaluation report. Hence, evaluation on M&E aspects is done bearing in mind that using the M&E tools was not stipulated as such in the Project Document.

39. The evaluation in Indonesia, Kenya, and Uganda was more elaborate than in the other countries, and included site and laboratory visits, interaction with stakeholders, and lengthier discussions on all aspects of project performance. Brazil takes an intermediate position as many project participants attended the AM-05, and a major participating institute was visited. Interactions with Côte d'Ivoire, India and Mexico were restricted to discussions with country teams present during AM-05 in Manaus.

II. Evaluation of the project

A. Evolution of the first tranche

41. The inception workshop of BGBD was held in Wageningen, the Netherlands, from August 26 to 30th, 2002. At that time there were administrative issues pending that prevented a rapid inception of the project. Memoranda of Agreement between GCO and CP convening institutions, and Letters of Commitment between CP convening and partner institutions were not finalized until December 2002 and it was only until February 2003 that all country programmes had received their first financial instalment. Other reasons for delay included TSBF joining the CGIAR system, becoming an entity within Colombia-based CIAT, and the GCO not being fully staffed until early 2003.

42. It was not feasible to start the fieldwork activities by September 2003, as originally planned. Apart from the organisational issues referred to above, questions on the sampling strategy (as agreed at AM-03) and on the common inventory methods of BGBD contributed to the delay. At AM-04 it was suggested to extend the first tranche to June 2005. This required a revision of the budget by GCO and by country programmes. The extension was approved by UNEP in June 2004, based on the revised budget and plan of work. The time needed by the country programmes to present revised country budgets varied considerably. Delay in presenting the revised budgets by the country programmes had adverse consequences for the release of funds to the country programmes by CIAT.

43. Constraints to project delivery were discussed during AM-04 and PSC meeting 2004. They related to communication problems, to the general complexity of the project and to management and implementation strategies at national level. During the PSC meeting 2004, a risk assessment was held facilitated by the UNEP Project Management Officer. The delay in project implementation was considered a risk or constraint in itself, since activities will 'pile up' towards the end of (the extended) first tranche. The risk of concentrating too many activities in a short period was estimated to persist during 2005, when additional activities such as preparing for the second tranche are included in the programme of work.

44. Between the Annual Review Meetings 2004 and 2005 (from hereon referred to as AM-04 and AM-05), the project rallied to catch up considerably with the original workplan. The Evaluation Team estimates the delivery rate *at the time of the evaluation, and more specifically during AM-05*, to be 65% of the anticipated outputs of the first tranche, against an expenditure rate of approximately 75%. Translated into *end-of-first-tranche figures,* percentages are estimated at 70% and 80% respectively. Although interviews with country teams yielded an average output estimate of 75%, this was later corrected by the Evaluation Team to 65% as country teams seemed biased towards particular outputs (i.e., results of the Inventory of BGBD).

45. At the time of evaluation, general satisfaction was notable on the plethora of data presented and shared among country BGBD participants at AM-05. A substantive portion of the remaining 30% of outputs that are not yet tangible are foreseen later in 2005, based on oral presentations at AM-05. GIven the initial delays described above, it was a pleasant surprise for everyone involved to see the countries deliver large portions of the work promised for the first tranche. As time went by, major differences in progress and output between countries were noted, due to a variety of reasons. Because of this, Chapter III specifically describes and discusses output and performance at the country level.

46. On completion of the BGBD inventory along commonly agreed and tested sampling methods, a unique set of information will have been gathered, unmatched anywhere in the (tropical) world. This dataset has intrinsic (taxonomic) value, but also high potential value for conservation-cum-management applications to be tested in the second tranche and beyond. Once available as a database and in published books and papers, a large community of (global) stakeholders stand to benefit. This will make BGBD sustainable in the sense that its outputs will be useful starting points or baseline data for R&D efforts elsewhere in the tropics.

B. Achievement of Project Objectives

46. The Project objectives as formulated in the Project Document cover the entire lifespan of the project. Hence, evaluation at the level of project objectives was not really possible given the timing of the evaluation (halfway through the project). No particular objectives for the first tranche were formulated at the time, allowing only a stock-taking approach at this stage, instead of a thorough value judgment. As the first tranche nears completion, the overall Project Goal, , '*to enhance awareness, knowledge and understanding of below-ground biological diversity important to sustainable agricultural production in tropical landscapes…..*' has been realized on the knowledge aspect, the understanding was strongly enhanced during AM-05 and will further follow from effective dissemination of publications, whereas the awareness component needs more attention once the understanding is clear. The parts of the Objectives *'by the demonstration of methods for conservation and sustainable management*' is second tranche business. This second part of the Project Objective (see 3.) is central to the second tranche rather than the first.

47. Table 5, taken from AR-04, is mainly shown to highlight difficulties in linking achievements to performance indicators defined at the more general 'Goal' and 'Purpose' levels of BGBD. The Table shows that at the level of Development and Immediate Objectives, only few conclusions can be drawn at the mid-project stage. As far as the development objective is concerned, the first key performance indicator relates to 'By the end of the project'. The text under 'Status of the activities and achievements', , however, reads like a promise rather than an achievement, viz. *'The inventory will give valuable insights in possible conservation practices'*, whereas the second part does not really answer questions posed in this table. The performance indicator on capacity building is more straightforward as it can be quantified, and a 'percentage achieved' estimated, if expressed in knowledge gained during training sessions and workshops. However, it is difficult to say how the built capacity relates to required levels of knowledge as no 'baseline' needs assessment was performed although this had been stipulated in the original version of Table 5. Once again though, these M&E tools were introduced to the project after its inception.

48. Status of activities and achievements under the 'Immediate Objective' in Table 5 are largely irrelevant at this stage, as the performance indicators clearly hint at outputs to be obtained during the second tranche of the project. The inventory conducted during the first tranche is a necessary precondition to reach these objectives. Only the part on Website and prototype Database development relates to performance indicator on 'Global Methodology'.

Table 5. Indicators and achievements at Goal and Purpose level (taken from Annual Report-04)

Project intervention strategy	Key performance indicator	Status of the activities and achievements
Development objective (Project Goal) Conservation and sustainable management of below-ground biodiversity is enhanced.	By the end of the project, BGBD conservation practices identified, tested and implemented. Capacity to manage and conserve BGBD improved	Most of the field work for the inventory of BGBD across a land use intensity gradient has been completed by all the country programmes. Isolation and identification of collected specimens is in progress. The inventory will give valuable insights to possible conservation practices. BGBD reviews of the Kenyan BGBD programme and the Indonesian BGBD programme published this year provide further information on current status of research on BGBD as well as programmes and practices targeting BGBD in the respective countries. Two training workshops at the global level and a number of training workshops at the country level have been organised aiming to increase the capacity of the country programmes for inventory of BGBD (including species identification). (In total 82 persons trained in short courses)
Immediate Objective BGBD conserved and sustainably managed in globally significant forest ecosystems in seven tropical countries.	Increased BGBD and improved ecosystem functions demonstrated in sites under improved management. Alternative strategies for land management promoted and/or adopted by stakeholders across a range of scales from the farm to the nation. Global methodology and database for BGBD developed and utilised.	Not applicable at this moment of time. Demonstration plots will be established during the second tranche of the project. Preliminary results on the inventory to establish the current status of the BGBD have been presented by all country programmes concerned. Methods for inventory of BGBD have been agreed and documented. Prototype database has been developed and discussed with most of the BGBD country programmes. WEB sites are established by the Global Coordinating Office and the Brazilian BGBD programme. Stakeholder meetings have been held by the Mexican BGBD programme and the Indonesian BGBD programme.

C. Achievement of Project Outputs and Activities (General)

48. Country Teams reported that 65-80% (average 75%) of the expected outputs and activities had been realized. The Evaluation Team, however, observed some bias in reporting these figures as country teams are mainly concerned with the 'jewels' of the first tranche, i.e., Inventory of

BGBD (2.2 in Table 6). Components 1.2 (indicators) and 1.3 (economic valuation), and the preparatory work envisaged under Outcome 3 and 4 are still clearly behind schedule. The Evaluation Team therefore takes 65% (at AM-05, April 2005) and 70% (at end of the first tranche, June 2005) as the more credible figures. Milestones and outputs have been monitored by the UNEP Project Management Officer, in collaboration with the GCO, and are reflected in summary tables for Outcomes 1, 2 and 5 in the Annual Reports, according to the format provided in the M&E Plan (shown in Annex II). Table 6 below follows the same format, but is a summary table following from country-specific updates provided to the Evaluation Team during and after AM-05. Although informative in a general sense, country-specific input paints a more diverse picture. This is further worked out in Chapter III and Annex IV of this report.

Table 6. Milestones and Outputs, 1st Tranche (summary of Country Team exercises during and after AM-05, compiled by the Evaluation Team)

SUMMARY FOR ALL COUNTRIES – Outputs and Milestones 1st Tranche

OUTCOME 1.

1.1 Standardized methods

M-1 Methods used were selected mainly from Swift and Bignell in consultation with national partners and adopted for use at the AM-04 meeting in Embu, Kenya.

M-2 Since most of the selected methods were already established, their testing was done in-situ with inventorying. Refining the methods has been continuous, beginning with the Global Meeting in Embu in February 2004.

O-1 Refined methods have been documented and the editorial process for publication was agreed during the AM-05, Manaus, Brazil. Some countries have documented the methods at country-level for common use.

1.2 Indicators agreed and tested

M-1 Indicators of BGBD loss have not been agreed on at the Global level yet.

M-2 Indicators of BGBD loss not yet tested because they have not been agreed on. However, Indonesia has tested the Food-Web and Velasques models, while India is testing relationships between agricultural productivity, soil properties and BGBD loss.

O-1 Validated indicators for BGBD not yet available

1.3 Tools for economic valuation

M-1 Economic valuation workshop attended in February 2003 in France. Three countries have discussed the tools at National workshops.

M-2 No tools have been tested in case study

O-1 No tools have been evaluated and documented on Global level yet.

OUTCOME 2.

2.1 Benchmark areas and sample areas mapped and documented

O-1 Four countries (Indonesia, Brazil, Cote d Ivoire, India) have had land use maps produced; the others were near completion.

O-2 Establishment of Geographical databases containing data on soils land use are at different stages, being mainly partially operable and continually updated.

2.2 Inventory of BGBD

M-1 Establishment of sampling frames was completed in all countries

M-2 Four countries (Indonesia, Brazil, Cote d Ivoire, Mexico) have completed the necessary inventories; others are in progress mainly collecting confirmatory data.

M-3 For all countries, field data have been partially analysed as reported during AM-05.

O-1 Data on inventory are being organised for entry into the National data base using format provided by the global office. Modalities for transfer to the Global database are being discussed.

2.3 Global Information Exchange Network

M-1 Network for information exchange at the Global level is being constructed. Brazil has

WEB-based network in Portuguese. Other information exchange is through email and workshops.
M-2 Database design is in progress.
O-1 Database not yet operable.

OUTCOME 3.

3.1 Demonstration sites selected

M-1 Demonstration sites not yet selected but have been discussed and/or proposed in some countries.
M-2 Farmer's management practices have been identified during workshops in some countries, but only as a preliminary activity in the selection process.

3.2 Farmer BGBD management practices

M-1 Tranche II milestone
O-1 Tranche II output

OUTCOME 4.

4.1 Policy obstacles identified

O-1 Tranche II output. Brazil has conducted a policy review, but updating this continually
O-2 Tranche II output. Brazil has reviewed international conventions of relevance to BGBD

4.2 Policy negotiations

M-1 Tranche II milestone
O-2 Tranche II output

OUTCOME 5.

5.1 Selective training courses

M-1 Several short-term specialist in-country training activities have been conducted
M-2 Specialist training activities in special techniques and methods held mainly through South-South collaboration. The Economic valuation training was held in France.

5.2 Students selected

M-1 Variable numbers of students per country at PhD, MSc and undergraduate have been identified for training or are already training on the project (currently approximately 160). Brazil has the highest number at about 70 students

5.3 Awareness raising

O-1 All countries have held sensitisation workshops and dialogues with stakeholders. Posters and leaflets are for the most part being developed.
O-2 Some policy documents have been assembled by some countries (details in country tables)

49. Annex III provides an overview of project outputs and reports. In spite of a large number of reports produced, publication of results from the first tranche in the international R&D arena is still (understandably) meagre, given the fact that the first major delivery of data was realized during AM-05, and that the publication process takes time. Current tangible outputs include powerpoints shown during oral presentations at AM-05 and before, student thesis reports, 'grey' reports with basic data, and country databases. As part of the PDF-B activities, it was agreed that each country produce a biodiversity review, detailing the state-of-the-art knowledge on issues pertaining to the project, particularly BGBD, and focusing as much as possible on the benchmark areas. Five countries have so far analyzed the current status of BGBD and published the results in either books or journals (Brazil, Kenya, India, Indonesia and Mexico). The BGBD reviews highlight the occurrence and functions of different soil biota in the specific countries.

Project Output: reports and leaflets produced by Indonesia team

50. Standardized methods (1.1 in Table 6) have been agreed on and tested, but still have to be properly documented. Also, there is a 'simple' and a 'complex' agreed methodology. The latter was used by countries with the better expertise and research infrastructure.

Symbol	**Description**	**Function**
	Soil profile	Extracting soil samples
	Soil monolith	Quantifying ants, termites, Beetles, earthworms
	Soil cores	Quantifying nematodes & microbes
	Soil cores	Quantifying mesofauna
	Winkler extractor	Quantifying ants, beetles, & mesofauna
	Pit falls	Quantifying ants, beetles & mesofauna
	Transect	Quantifying termites and earthworms

Soil biota collection in the field was carried out using several methods including the use of soil monoliths, soil cores, pitfalls, and Winkler extractors. Each of the different collection methods targeted different biota types and sizes.

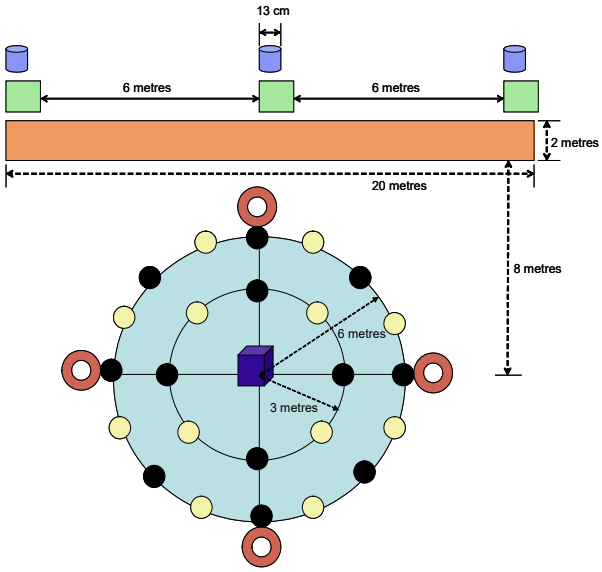
51. Work on indicators (1.2 in Table 6) has not really come off the ground yet, partly because it is to follow the completion of BGBD species inventory. The component 'tools for economic valuation of BGBD' (1.3 in Table 6) was addressed with the help of an external consultant. In spite of a joint meeting and country level case studies, not many tangible outputs are on the table yet.

52. Benchmark sites were selected and mapped along commonly agreed frameworks (2.1 in Table 6). All the soil biota and functional groups of BGBD were sampled at each point in each country using the sampling scheme shown below. The observations were carried out in selected windows within the benchmark areas for an expected minimum of 120 points. The sampling was to cover a gradient of land uses ranging from pristine forests, to high and frequently cultivated land in each of the countries participating in the project. The sampling strategy ensured that land management strategies could be linked to the occurrence, abundance and diversity of any species that is under study. The figure below shows how sample collection was organized.

Tea on the slopes of Mount Kenya – part of Embu benchmark site, Kenya

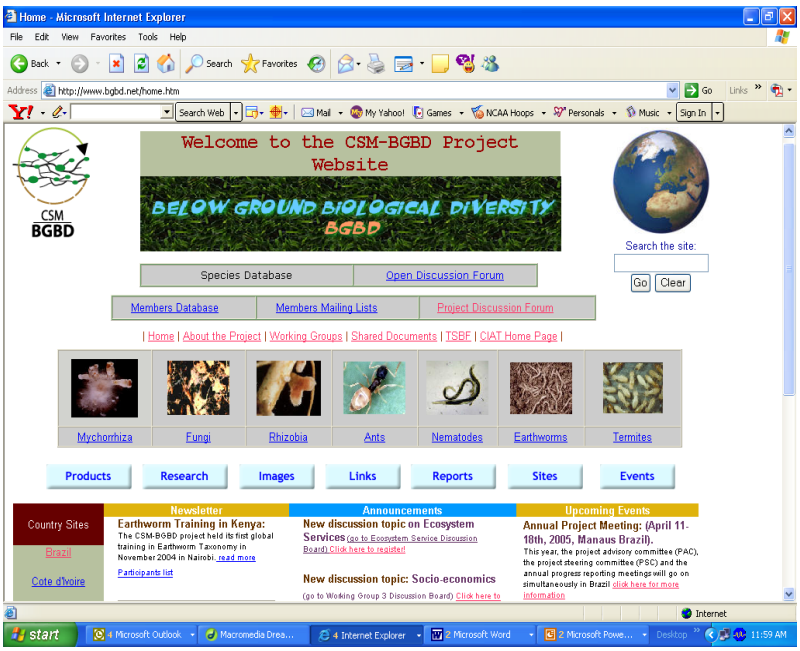
53. Fieldwork for the inventory of functional groups (2.2 in Table 6) has been completed in all countries. Although the Project Document lists 2-3 benchmark sites per country, they all had either one or two (which to the Evaluation Team seemed quite realistic), and not all countries sampled the 100 points per benchmark site as was earlier agreed. Macrofauna characterization has almost been completed in all countries, but (the more complicated) identification of meso- and microfauna lags behind in countries that have less expertise and infrastructure, a point the Project Document shows was only admitted by Uganda at project inception.

BGBD laboratory at INPA, Manaus, Brazil



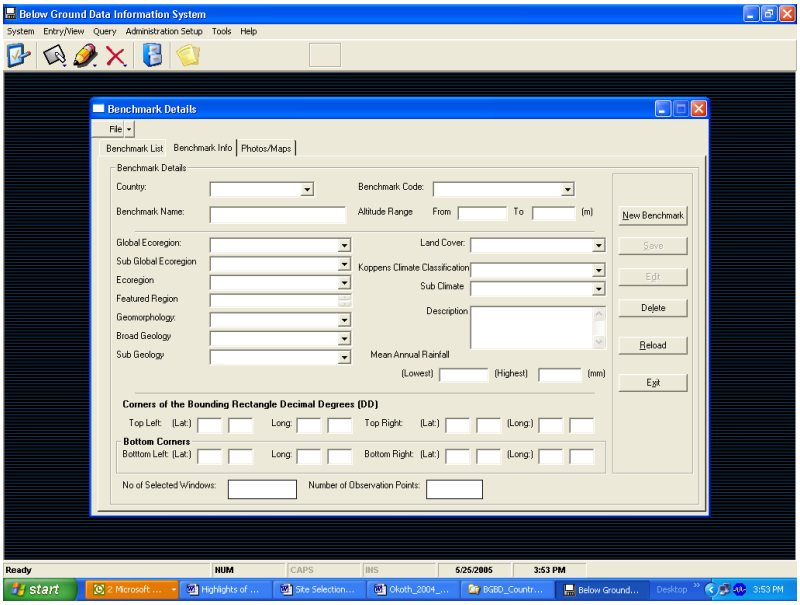
Standard methodologies: BGBD field sampling frame for species inventory

54. Considerable progress was made on the international information exchange network (2.3 in Table 6). The project website was established during that same period. The website www.bgbd.net is in the air providing an array of useful information and links to topics and partners. One link leads to www.biosbrasil.ufla.br, which highlights achievements and networks on BGBD and related topics in Brazil. Other countries have similar plans. The Homepage interface of the project website has several modules including 13 mailing lists, an announcement bulletin, a news bulletin and an events bulletin. It also has a discussion forum and members database. A species database is under construction. Functions of the project working groups and links to other important biodiversity websites have also been included.



BGBD Homepage of Global Website

55. The prototype country database has modules for entering, querying, securing and backing up the data. It includes data on the benchmark sites, the windows and the sampling points.



BGBD Prototype Country Database

56. Capacity building (5.1 in Table 6) took effect through a large series of workshops and training sessions, mostly tailor-made and on-the-job in order to handle the inventory of below-ground mesofauna and microfauna (summarized in Annex III). Although knowledge levels were raised considerably, many country team members (both trainers and pupils) mentioned that some training sessions were too brief, given the complex and academic nature of the work. Different degrees of awareness were raised (5.3 in Table 6) through liaison with NPACs and their networks, and dissemination of leaflets, flyers, and presentations. The approach was so far somewhat *ad hoc*, country teams grabbing opportunities for awareness-raising as they presented themselves. On the involvement of students (5.2 in Table 6), large disparities between countries were observed. More than 160 students are currently involved in BGBD, among which 70 are from Brazil, 40 from India and 19 from Côte d'Ivoire. Particularly involvement of BSc. students was found helpful, as their thesis period is short, fitting project tranche 'lifetimes', and the work involved can be restricted to rather straightforward pieces of R&D that contribute well to expected project outcomes. The Brazilian government particularly supported student involvement by providing additional funding, whereas the Indian host institutions created enabling conditions for students to be involved in BGBD.

57. On quality of outputs, peer reflection took place during AM-05 upon country presentations of outputs realized so far. Although the list below may seem discouraging, the reviewers unanimously expressed great satisfaction on the work done, and confirmed the uniqueness of the work done, the global setting, and the benefits that may be reaped from the new knowledge.

Constraints as to quality identified included:

- Differences in sampling, indexing, and foci will make it difficult to analyze results across countries
- No link exists yet between sample points (which were selected by scientific, statistical methods) and the people behind the land use at the particular point, i.e., those who 'happen' to own the land where the sampling was done

- The number of windows, how they were selected, and the number of data points in each window vary across the seven countries
- Are inventory methods and functional group concepts consistent across sites?
- What about seasonality, timing of observations, and cross-site comparisons?
- Can landuse gradients be compared across benchmark sites?
- How will the land use intensity index be used? Is it being applied consistently?
- A long list of external driving forces were mentioned by various studies: how can these be synthesized/compared across sites? Who will organize and lead that synthesis during the second tranche? Can the synthesis effectively make the social-biophysical connection?

Weaknesses and gaps identified included:

- Absence of proper involvement of biometrics and statistics in general; no variability in errors was discussed, only average were presented instead
- Farmer perception of BGBD still poorly understood
- Pastures underrepresented as (important) land use
- Land use history is not recorded at plot level but at landscape level. This is useful, but not sufficient
- Standardization of socio-economic data is needed for comparability across sites
- What are baseline conditions regarding knowledge systems, attitudes and practices of key groups (farmers, policy makers, scientists)
- Site characterization data set lacks a description of the surface O and A1 horizons, porosity, root density, bulk density, and C and nutrient concentrations
- Links between above and below-ground biodiversity should be looked into more explicitly, as part of a conceptual framework

D. Impact and sustainability

58. Although prominent in Chapter I.C 'Scope of the Evaluation', it is unrealistic to expect major impact from the BGBD project at the end of the first tranche, and similarly, as a result of activities and outputs produced during that period. As mentioned earlier, it was not envisaged to be a 'stand-alone' component with a particular expected impact. Even early impact is hard to substantiate given the strong focus on (agreement on) common methodology development, sampling and inventory in the laboratory during the first tranche. The outputs obtained and still expected, however, and notably the data on functional groups, obtained using common methodologies, have the potential to generate large impact if properly and visibly published and disseminated. The network around BGBD, including international 'champions' and the proximity to the 'mother' project ASB should be utilized in this respect. Global synthesis of the results of the BGBD inventory and publication in a top journal will have major impact and should be strived at explicitly.

59. The Project Document states that *'one major guarantee for the continuing sustainability of the benefits of this project will be invested in the International Information System that will be an output synthesizing the operational components of the project. For this to be the case depends first on establishing a shared data policy and the development of a World Wide Web site that contains the data presented in a user-friendly format'.* Data sharing, however turned out to be an issue of considerable concern. It was discussed at length during AM-05 based on a paper by the Project Information Manager (PIM), and needs to be resolved as a matter of priority. Country Teams agreed that raw data on inventory results will only be added to the global database three years after collection. In this way, ownership is thought to be adequately protected and time for manuscript development and publication sufficient. Although 'international public funding'

would stipulate open access to the data, it is understandable and legitimate that researchers want to reap career benefits by publishing the material under their name. A publication strategy was discussed during AM-05. Concretely and ideally, and in the interest of maximizing impact and global sustainability, the best papers should be published in Special Issues of journals, books, or in project and conference proceedings.

60. Sustainability also depends on the willingness of decision-makers to utilize the information and turn the database into a useful policy tool. Interest and participation of the media and production of documentation, e.g. videos for greater visibility are also important. This has incidentally being realized, and Brazil has been particularly successful, which is reflected in the added co-financing in the course of the first tranche. It has also been realized in cases where NPACs are made up of influential individuals and/or closely linked to GEF Focal Points in countries, and to CBD and MDG circuits.

Attractive posters and leaflets help raising awareness, investment and sustainability (macrofauna inventory, Indonesia)

E. Execution performance

Global Coordination Office

61. Overall coordination of BGBD is the responsibility of TSBF-CIAT. The institute hosts a full-time BGBD global coordinator (GC), project information officer (PIM), administrative assistant and a secretary. Meanwhile, the TSBF-CIAT Director is involved in his capacity as member of the PSC, and the Working Group 3 convenor is also a TSBF-CIAT staff member. Other staff members of TSBF-CIAT provide ad-hoc support.

62. The GC is involved in all duties listed in his ToR (which is given in the M&E Plan). Following the successful AM-05, major attention is now given to 'synthesis of results at the global scale', 'prepare and publish reports and papers on the project results', and 'oversee the project publication activities'. For the second tranche, the ToR components on 'establishing and maintaining links with donors' and 'liaison with other projects and institutions working on agricultural biodiversity' should come to the fore more clearly, in the interest of sustainability. Feedback from the country teams on the functioning of GC was generally positive. Although most country teams referred to the slow start of the project, and to initial poor communication, the acceleration since early 2004, culminating into good delivery at AM-05 was also attributed to the catalyzing role of GC.

63. As to the Project Support Staff, the PIM largely lived up to his ToR, and should focus more on ToR components '*to liaise with other projects and institutions working on agricultural biodiversity with respect to data and information exchange*' and '*assist project participants in making BGBD data available to a variety of interested parties*' during the second tranche. The PIM has struggled to build in some functionalities in the website, which turned out to be very time-consuming. Given the PIM's qualifications (PhD. in GIS and remote sensing), technical nitty-gritty concerning website and database construction and maintenance should be outsourced to a professional webmaster, allowing the PIM to be more involved in regular project activities that relate to spatio-temporal matters during the second tranche. Feedback from the country teams on the functioning of PIM is positive.

64. On administrative and secretarial support at the level of GCO, some countries noted (sometimes serious) flaws in communication and a lack of 'sense of urgency' when countries were in need of action. This pertained to late replies to emails on urgent matters, inefficient itineraries for travelling country team members, and lack of facilitation in liaison between country teams and CIAT on disbursement of funds.

Coordination of Country Programmes

65. ToRs for CPCs are rather soft ('supervise', 'oversee', 'represent', 'preside over') and hence, hard to evaluate. Strong attention in the second tranche is needed on 'representing the national programme at national and international meetings and other fora', and 'liaising with other project and institutions working on agricultural biodiversity at national level', through the NPACs. The wording should, however, be stronger so as to evaluate impact and sustainability realized through CPC's interventions. In an amended ToR, 'establishment of baselines' as stipulated in the project logframe, should be brought under CPC responsibility.

66. When asked how much time CPCs spent on BGBD, the answers were 10, 20, 30, 60, 65, 75 and 85%! Country team members were asked for feedback on the functioning of the CPC. Praise was more common than criticism, but still some comments include:
    - CPCs at the lower end of the above time investment should be aware that their limited availability is sometimes felt as a constraint
    - CPCs should take care to cover all disciplines in the project equally, and not focus too much on their own expertise
    - CPCs should raise their profile at national level, making BGBD known and trying to realize the highest possible impact at political and R&D levels

67. No verifiable linkage could be established, though, between CPC availability, national country team approach (network or dominance by one institution) and project output as the above findings are based on interviews only. Moreover, some countries have very active and more available deputy CPCs. This works well as long as communication and sharing of responsibilities is properly organized.

68. When CPCs were asked what they considered as 'major headaches', the following issues came to the fore, in order of severity:
    - Delays in funding transfers due to long 'dry spells' (up to 4 months) between accounting and receiving new tranches via CIAT; not all host institutions are in a position to lend money to the project to overcome this constraint
    - Lack of funds for formal (degree) training; some countries provide sponsorship from national resources, others do not

- Limited national capacity on some BGBD subjects
- Participants in BGBD are very busy with different duties, and the CPC has a hard time to get them together and make them stick to workplans and deadlines
- Currently there are few researcher-farmer linkages (except Brazil and Mexico) due to inventory focus
- Unpredictable attitudes of farmers (consent and refusal)
- Rapid turnover of administrators in districts where BGBD is active
- CPCs are not sure whether they are good 'people managers', as that is not what they have been trained in

Working Groups, incl. Convenors and Technical Advisors

69. In the matrix structure that the project adopted, country teams (one nation, all disciplines) cut across Working groups (all nations, one discipline). Working Groups (WG) are led by convenors, and operate along 'task groups' that take on specific issues that have to be addressed by all countries. Four WGs are operational, covering (1) inventory and characterization of the different below-ground functional groups (macrofauna, such as earthworms and termites; mesofauna, such as *Collembola*, and microfauna, such as mychorriza and *Rhizobia*), (2) information management and site characterization, (3) sustainable management of BGBD, and (4) economic evaluation, policies and public awareness. The ToR for WGs and WG Convenors is elaborate but at the same time, it is rather non-committal, with few hard outputs listed. Another issue of concern is the limited decision and financial power that is held at the WG level, which goes against the fact that the Global Workplan uses Working Groups as main entry points. Emphasis in the first tranche has been largely on the work to be undertaken in WG 1 and 2. Although the Global Workplan shows a range of activities to be undertaken under WG 3 and 4 during the first tranche, they seemed to have received less emphasis during this period. Lastly, WG 1 was convened by the Brazil CPC and WG 2 by the Global Coordinator, implying that these convenors wore two hats. Although it does not at all seem to have negatively affected progress, from a management viewpoint it would be better not to have such dual roles.

70. Feedback from country teams on WGs and convenors was mixed. Most countries found the structure difficult, due to communication problems and the absence of stimulating mechanisms at this level. Nonetheless, the zeal of the WG 1 Convenor in getting task forces on functional groups do a good job was mentioned more than once. Also, support on a joint approach to benchmark site selection and sampling (WG 2) went well. The Evaluation Team is of the opinion that the matrix structure is unnecessarily complicated for multi-country and multi-continent project such as BGBD, making country teams the much more logical entry points than working groups. It is suggested to simplify the organogram (Figure 1) accordingly, by replacing TAG and WGs by a Pool of Consultants to be appointed by TSBF-CIAT when appropriate.

Technical Advisory Group

71. The project benefited considerably from the knowledge and passion of 'champions' in the field of soil zoology and ecology, who were initially brought together in a Technical Advisory Group (TAG) during the first tranche. This group was later turned into an *ad hoc* advisory group of individuals. A slight risk, particularly at AMs is the (inadvertent) dominance during debates on key issues in project implementation. This may be counterproductive as to the raising of self-consciousness and eloquence on the part of the country participants. More importantly though, the champions were commended by all country teams for their strong academic support, and are seen as an indispensable sounding board for BGBD.

Project Steering Committee

72. The PSC largely lives up to its ToR. Annual Meetings have so far always included PSC meetings. The PSC is indispensable and should continue to meet annually. No changes are proposed here.

Project Advisory Committee

73. The PAC held its first official get-together during AM-05. Although *ad hoc* advice by individual members was given throughout the first tranche, it has not been able to provide the guidance that was specified in the ToR. During AM-05, PAC reviewed the project logframe and suggested changes on indicators and verifiers that would allow a more 'SMART' monitoring and evaluation of targets to be met. It is hard to judge to what extent the failure to hold a PAC meeting at the start of the project has affected the project. Clearly though, the slow start might have been avoided. Nonetheless, BGBD was presented to the SAC (Scientific Advisory Committee of TSBF) that includes a member of the PAC as well as advisers to the project. On discussing its ToR, PAC objected to having been given responsibility in approving project reports and publications (which should be done by PSC), and in acting as a board of referees for project publications (for which GC should find ways and means). Individual members of the PAC may well be available to assist in writing or reviewing reports and documents of major importance, such as policy related documents and final reports to GEF of the first and second tranches of the project.

Workplans

74. Project activities go by Global and National Workplans. The Global Workplan has five first order categories: Global Project Management (0) and the four Working Groups (1-4). Project Outcomes only come back at the second level. The Workplan also indicates when an activity should be completed, and who is responsible. By shading activities that have been completed, GCO and WG Convenors can keep track of progress. The approach very much suggests that WG Convenors were in the 'driver's seat' during the first tranche. This however has not transpired from the country meetings, where the Country Team and Outcome entry were much more 'between the ears' than the WG entry. The Evaluation Team considers the appearance and effectiveness of the Global Workplan unnecessarily complicated and therefore suboptimal.

F. Financial arrangements and Flow of Funds

75. Table 7 shows that by the end of 2004, 70% of the country budgets for the first tranche had been transferred by CIAT. Real expenditure is less, as most countries had balances left in their accounts, with the exception of Kenya, which at the time had not delivered proper reporting on the previous financing period. All countries received four payments out of 6, apart from Kenya (3 out of 6). At the time of this Evaluation Team, Brazil had received payment 5. Payment 6 is normally paid on completion of the agreed work for the first tranche. It is expected that all countries fully utilize the funds planned for the first ytranche by the end of June 2005.

Table 7. Country budgets (GEF component, 1st Tranche) and amounts transferred by end of 2004 (in US$).

BGBD Country (convening institution)	Budget 1st Tranche	Expenditure 31 Dec. 2004
Brazil (Universidade Federal de Lavras)	505,564	372,538
Cote d'Ivoire (Universite de Cocody, Abidjan)	480,202	350,833
India (Jawaharlal Nehru University)	493,636	360,619
Indonesia (Universitas Lampung)	504,977	372,111
Kenya (University of Nairobi, Chiromo Campus)	501,541	252,675
Mexico (Instituto de Ecologia, Xalapa)	493,630	360,612
Uganda (Makerere University)	490,816	358,559
Total	**3,470,366**	**2,427,947**

76. Countries generally use the same budget framework as the GCO. Table 8 shows real expenditure at country level in 2004. India and Mexico were the only countries that made use of Subcontracts at a significant scale. Indonesia spent more than three times the money spent by Uganda. Also here, interpretation is difficult, as some countries mentioned they had a backlog in paying project partners for their services. Spending on Personnel is substantial throughout. The Project Documents states that: "*Personnel Costs are costs for additional staffing at each of the sites plus a Project Coordinator, Project Manager and Project Assistant at TSBF and costs for contribution of TSBF staff (..) beyond the co-financed activities".* Although it is difficult to define *'additional staffing',* there is a need to draw a stricter line on spending from budget code 'Personnel' in the second tranche, also in view of sustainability.

Table 8. Country-level expenditure in 2004 per line item (GEF component, 1st Tranche, in US K$)

	Bra	CdI	Inda	Indo	Ken	Mex	Uga
Project Personnel	123	72	18	125	41	52	63
Sub-contracts	0	10	127	0	0	90	0
Training	15	22	27	63	67	5	19
Equipment and Premises	95	31	2	81	4	2	18
Miscellaneous	4	32	12	62	61	6	9
Total	**237**	**167**	**186**	**331**	**173**	**155**	**109**

77. Country budgets are managed by the convening institutions, on the basis of Memoranda of Agreement. In most cases, BGBD is run from a separate project account. Most country teams have one researcher who is in charge of the budget. Although this should in fact not be their duty, it keeps lines of communication relatively short. Transfer of new tranches is only approved by GCO when financial reporting at country level is timely and satisfactory. Most countries have expressed dissatisfaction on the lack of information from CIAT on the effectuation of transfers. An email message with information on the transfer will do a lot of good, and allows better forward planning. Complaints on late transfers were also many, and held up expenditure in the early stages of the project, which traditionally is a period of high spending. Scrutiny of financial reports, however, has shown that country budgets have only occasionally been depleted during

the first tranche, which was often due to deficiencies in financial reporting by countries, also due to limited professionalism in this field by the researchers in charge.

78. There is no clear linkage between workplans and budgets, i.e., line items in Table 8 do not refer to activities and expected outputs listed in workplans and M&E tables. Expenditures, as a result, were not tightly bound to activities. Table 2, for example, shows a substantial budget to realize parts of Outcome 3 during the first tranche, but Table 6 and the country M&E tables in Chapter 3 show that work on this Outcome involved mainly preparations for the second tranche. Hence, it seems that US$ 1.2 million of the funds to realize Outcome 3 during the first tranche were partly used to realize other Outcomes. As a consequence, the second tranche may face difficulties in getting the envisaged work done. Due to lack of linkages between budgets and workplans, these processes may go largely unnoticed.
79. Tables 9 and 10 show the co-financing overview (by end of June 2005, hence end of the first tranche). Out of the total project cash and in-kind co-financing together (US$ 7,438,678; see Table 2), 48% was realized by the end of the first tranche, whereas 86% of the amount assumed for the first tranche was realized. The distribution of co-financing across tranches was not foreseen at project inception. The Figure of 86% is calculated after partitioning co-financing the way it was done for GEF funding (Table 4). The good score is amplified by unforeseen additional co-financing as shown in the bottom half of Table 9. GCO and UNEP Task Force Manager provided a comprehensive co-financing overview to the Evaluation Team in which Table 9 below is further broken down by Outcomes, also showing which national and international partners have provided which part of the co-financing. Table 10, in addition, shows co-financing by resource groups.

Table 9. Co-financing budget and realization by June 2005 (in US K$)

	Total project co-financing budget	Cash contribution budget Tranche I,II	Cash received by June 2005	In-kind contribution budget Tranche I, II	In-kind received by June 2005
Brazil	1257	60	59	1197	586
Cote d'Ivoire	277	0	0	277	165
India	682	0	0	682	366
Indonesia	559	200	0	359	119
Kenya	1022	0	0	1022	553
Mexico	566	0	0	566	184
Uganda	470	0	0	470	89
Global	2605	250	124	2355	997
Subtotal Original	**7438**	**510**	**183**	**6928**	**3059**
	Total project co-financing budget	Cash contribution budget Tranche I,II	Cash received by June 2005	In-kind contribution budget Tranche I,II	In-kind received by June 2005
Additional					
Brazil	0	0	326	0	716
Cote d'Ivoire	0	0	0	0	16
India	0	0	0	0	103
Indonesia	0	0	0	0	94
Mexico	0	0	0	0	203
Uganda	0	0	0	0	162
Total Additional	**0**	**0**	**326**	**0**	**1294**

Grand Total	**7438**	**510**	**509**	**6928**	**4353**
Mexico (revised co-financing budget)	305	0	0	0	203

Table 10: Co-financing and leveraged resources

* Other is referred to contributions mobilized for the project from other multilateral agencies, bilateral development cooperation agencies, NGOs, the private sector and beneficiaries.

Co financing (Type/Source)	IA own Financing (mill US$)		Government (mill US$)			Other* (mill US$)		Total (mill US$)		Total Disbursement (mill US$)	
	Planned	Actual	Planned Tranche I and II	Leveraged Tranche I	Actual Tranche I	Planned	Actual Tranche I	Planned Tranche I and II	Actual Tranche I	Planned Tranche I and II	Actual Tranche I
Grants			260,000	326,566	385,606	250,000	123,592	510,000	509,198	510,000	509,198
Loans/ Concessional /market rate											
CREDITS											
Equity investments											
Committed in-kind support			4,573,678	1,295,063	3,357,170	2,355,000	996,813	6,928,678	4,353,983	6,928,678	4,353,983
Other											
Totals			**4,833,678**	**1,621,629**	**3,742,776**	**2,605,000**	**1,120,405**	**7,438,678**	**4,863,181**	**7,438,678**	**4,863,181**

Other (*)	**Planned (U$)**	**Actual (U$)**
TSBF	1,480,000	624,813
CIAT	875,000	372,000
Rockefeller	100,000	80,092
UNESCO-Danida Funds-In-Trust	150,000	43,500
Total	**2,605,000**	**1,120,405**

G. Stakeholder participation and country ownership

80. In each country, during the PDF-A and -B periods, the commitment of all the major stakeholders to and/or endorsement of, the project was secured through a series of consultations, meetings with farmer groups, scientists from other institutions, government and NGO representatives. This process was completed for each country by a National Workshop that brought together representatives of each stakeholder group to discuss the project objectives and outcomes, and plan their involvement.

81. The Project Document encompasses a 'Stakeholder' chapter, in which country teams listed stakeholder (groups) and projects/activities that might stand to benefit from BGBD or vice versa. At the time of evaluation, however, stakeholder involvement is still a rather an *adhoc* project component, although successful in a couple of countries. Spill-over to stakeholder groups deserves a more structured and well-monitored approach during the second tranche. This holds for organizations included in the NPACs, for third parties and projects in BGBD countries with similar interests, but also for neighbouring countries with similar agro-ecologies and R&D structures. System-wide programs convened by CGIAR centres may also prove a mechanism for scaling-out project results, ASB being an obvious case in point. Meanwhile, in several countries (etc. Brazil, Mexico, Indonesia) farmers have been actively involved in the project implementation.

82. By the end of 2004, there were almost 200 scientific staff involved in GCO and the country programmes, excluding technicians, and administrative personnel. An approximate 160 students work(ed) on their thesis in BGBD context. The BGBD project has been represented at a number of international conferences to increase the 'visibility' of the project. Kenya officially launched the BGBD programme, and a national stakeholder meeting was organised by the Mexican BGBD programme, both events being covered on radio and television. Ownership of BGBD was high in all countries. No country team members felt the project was imposed upon them by other parties. The work is considered interesting and relevant throughout, and giving results that would otherwise not be realized.

83. The multi-country aspect of BGBD is seen as a challenge by most countries. Differences come to the fore, in terms of co-funding, provision of funds for students, quality of laboratory facilities, distance to (one or two) benchmark sites, etc. In that sense, 'better-off' countries have started to play a guiding role, assisting those that are lesser-endowed. Care should be taken though that the 'better-off' have sufficient incentives to move on, also to exploit their capabilities to the full extent.

H. Replicability

84. The Project Document states that '*The broad range of ecological and social conditions covered by the seven countries ensures that the results and conclusions of this project will go beyond the experimental sites. The results from this project will not be applicable only to those sites or countries where the experiments will be carried out but also to other countries throughout the tropics'.* Towards the end of first tranche, this still very much holds true. .

85. Once data presented during AM-05 are turned into disseminated information, through proceedings, leaflets, and journal papers, opportunities to replicate are manifold. The decision to follow (as much as possible) common methodologies with respect to site selection, field

sampling, and inventory of functional groups allows third parties to fully replicate the BGBD approach.

I. Use of Monitoring and Evaluation tools

86. Monitoring and evaluation tools only came into the project after its inception. The , 'MONITORING, PROGRESS REPORTING, AND EVALUATION PLAN: Conservation and Sustainable Management of Below- Ground Biodiversity: 1st tranche' includes the following tables and annexes:

- Table 1: Indicators for Evaluating Whether Project Management Units are Effectively Operational
- Table 2: Description and timing of expected outputs by project component
- Table 3: List of Key Performance Indicators
- Table 4: Monitoring, Reporting and Evaluation Responsibilities
- Table 5: Monitoring and progress reports
- Table 6. Principal Reports by title, number, timing and responsibility
- WORKPLAN of the BGBD project 1st Tranche
- Annex 2. Project management and implementation structure
- Annex 2.1. Terms of reference for those entities that are part of the project management and implementation structure
- Annex 3. Report on Planned Project Co-finance and Actual Co-finance Received

87. The AR-04 is a good example of proper use of Monitoring and Evaluation tools. For the most important Outcomes 1, 2 and 5, GC filled out Tables 1, 2 and 3 of the M&E Plan to summarize progress at country and global level. M&E tools were used at GCO level and in some countries. Examples of the use of Table 2 at national level are given in Chapter III. At national level, the tools have to be mainstreamed as their use does not yet seem to be part of daily business. The Workplan was used all along the way by the entire project. A minor number of responsibilities mentioned in Table 4 and Annex 2.1 were not (yet) taken up. Overall, M&E was done well at global level, and reasonably well at country level. Again here, differences between countries are substantial as shown by the tables in Chapter III. On Table 3, which follows the project logframe, PAC suggested useful improvements during AM-05, which mainly relate to a better, more realistic and more project-bound quantification of performance and impact indicators.

88. Country teams were asked by the Evaluation Team to fill out Tables 2 and 3 of the M&E Plan. Some did a good job right from the start, others provided products with little informative value (Chapter III). Country teams saw Table 2 as straightforward, but Table 3 was perceived as overlapping too much with Table 2. Only Mexico and Indonesia managed to fill out Table 3, but even then they each did it in a different way. Other countries were discouraged by the overlap and lack of clarity. Country summaries of Table 2 (Milestones and Outputs) are given in Chapter III, and Table 3 for Indonesia and Mexico only. Comparison of the tables shows how useful the tools can be when a real effort is made to make them informative. The way Brazil, Indonesia and Uganda filled out Table 2 of M&E Plan can serve as good examples, whereas Mexico is commended for attempting to make the best use of Table 3 of the M&E Plan. The results of this exercise can be used as a basis to improve M&E in the second tranche, and make country teams see the benefits.

III. Summary Outputs and Outcomes per country

89. In this chapter, the *couleur locale* is reflected, by summarizing, at country level, the perceptions of country teams as to Outputs and Milestones (Table 2 in M&E Plan). In addition, for Indonesia and Mexico, performance based on indicators (Table 3 in M&E Plan; based on the project logframe) has been analyzed. Additional information was derived from meetings with the country teams during AM-05 and visits to Indonesia, Kenya and Uganda. Full details following the lay-out of Table 2 and 3 of the M&E Plan are given in Annex IV .

Brazil

90. Project Progress

- The Brazil Team adopted site selection and inventory methods that have already been established, globally in use and agreed upon during AM-04. The only method that was partially tested was that used to characterize the legume nitrogen-fixing bacteria (LNB). Tools for economic evaluation are not yet identified. The benchmark areas have been mapped, interpreted and documented.
- The BGBD inventory is near completion; all sample frames were established and inventory was concluded for all functional groups by September 2004, except for additional confirmatory data collection for nematodes and earthworms. However, there has only been a partial analysis of the inventory data and consequently the National Database is incomplete. Development of the Global Information Exchange Network is in progress. A BIOSBRASIL portal has been developed (www.ufla.biosbrasil.br) but with information so far only available in Portuguese.
- Most team members on the project already are experts in their fields of research, requiring minimum specialized training for the team. Two members trained in earthworm identification, one in soil micro morphology and one in LNB molecular biology techniques. Three members were resource persons (South-South) in workshops on nematodes, mycorrhizae and termite identification. About 70 graduate (MSc and PhD) students have been selected to conduct research relating to the BGBD project.

91. Findings

- This was the first project involving different institutions (7 in all) and many scientists from different disciplines (31 in all). Because it is internationally funded, it gives it that status/back up for seeking local funding. For these reasons, there is considerable interest in its success as blueprint to more inter-institutional collaborative projects.
- Brazilian co-funding in form of scholarships has been substantial, which constitutes the reason for the large number of students on the project.
- There is a decentralized approach to planning for the research activities: needs were spelled out in the beginning by the team leaders. Funds are released to researchers to minimize on bureaucracy but institutional commitment letters hold them responsible.
- Brazil is large, the benchmark site is far away from the cities, and scientists come from institutions that are far apart. This has led to sampling being done within a given window period rather than at the same time which would make it difficult to get the scientists together.
- Communities have been involved in the inventorying exercises. This has been made to work largely by the technicians on-site linking the project with the communities.

- The project has equipped the laboratories, and has linked well with existing national programs
- Complaints on inefficiency in the TSBF office centred on slow communication
- Brazil has taken leadership in the south-south training programs. Resource persons involved in such programs indicated that the training periods were not enough to develop capacity of trainees to confidence levels of generating data without supervision.

Cote d'Ivoire

92. Project progress
- The project team employed methods that were agreed upon during AM-03 and AM-04 during the characterization exercise at the Oumé Benchmark Site. The methods have been compiled onto a CD-Rom. Identification and inventorying of soil organisms collected in the field are on-going and data analysis will have to be completed before determining and agreeing on indicators of BGBD loss.
- Interpretation of satellite imagery has been done for both Oumé and Taï Benchmark sites and land use characterization is in progress. Data are being compiled and organized for entry into the National data base as they are generated.
- Selected team members have participated in workshops on earthworm, nematode, termite and ant characterization, as well as on soil biology for sociologists. 13 BSc., 9 MSc. and 7 PhD students are conducting research with the BGBD Project.

93. Findings
- Expert personnel were lacking on the team, e.g. in fungi, nematodes and arthropods. Attending training courses in such fields at different times held back the program.
- Too much of the funds for training were being drawn from other project lines to meet travel to distant training centers and this could impact on research activities, especially given that allocation of funds to different activities is *ad hoc*.
- The Project Implementation Committee meets twice a month and makes decisions and allocations.
- There release of funds from the GCO was slow.
- There was limited co-funding especially in support of students.

India

94. Project progress
- The research team is nearly self-sufficient in expertise required to conduct the first tranche of BGBD activities. They tested and adopted the methods agreed during the global meetings and are already in advanced stages of preparing a training manual in the methods. The team is also testing "*agricultural productivity*" and "*soil physico-chemical properties*" as potential indicators of loss of BGBD. Tools for economic valuation have been tested in a case study.
- Mapping and documentation of benchmark and sample areas has been completed. Inventorying of BGBD is in progress, having completed establishment of the sampling frames and about 70% of inventorying and data analysis. The national information exchange network has been established. Demonstration sites for the activities in the second tranche have been selected in the two benchmark sites and farmer management practices have been identified.

- Some specialist in-country training exercises have been conducted as well as participation in global specialist training activities e.g. the economic evaluation workshop in France. About 50 students have been selected to conduct graduate research on the BGBD project.
- A review of soil biodiversity research in India has been published in a book by Oxford and IBH, and is being used for awareness raising.

95. Findings
- Choice of sites was deliberate to represent two biosphere reserves with variable biodiversity and farming systems determined by relief and climate.
- At least 6 institutions, mainly universities, and 50 scientists are involved in the project. Students on the BGBD are receiving stipend and tuition from other sources like the University Grant Commission and the Science and Industrial Research Centre indicating successful buy-in by different institutions in the country.
- Co-financing brought on board institutions with varied interests, resulting in accountability to a wide spectrum of interests, and therefore an improvement in quality.
- The National Steering Committee decides how funds are utilized; they are transferred from the Convening institution to participating institutions accordingly. The India team considered that the global office was quite efficient for this type of project and personnel at the centre.
- India decided to conduct inventory on biodiversity organisms that are relevant only to their country, which has implications for the global data.

Indonesia

96. Project Progress
- The Indonesian Outputs and Milestones indicate considerable progress in the development of methods and capacity to operationalise BGBD. Outputs are estimated as 100% (fieldwork), 80% (inventory Sumberjaya), 60% (inventory Jambi, and Methods Book). The team is testing the "Food-web" and "Velasquez" models as potential indicators of loss of BGBD. There have been country technical meetings to discuss LNB economic valuation and a book is being drafted in this respect. Database structure development (based on some web-based Freeware, and following training by GCO) is at 75% completion, but its compatibility with the global database is not clear. Having received two-thirds of the funding against the above Outputs, the team considers itself to operate highly cost-effectively. Collaboration with ICRAF led to a chapter in the CABI publication 'Below-ground interactions in tropical Agro-ecosystems', with Deputy CPC as main author.
- In-country training exercises have been conducted in GIS, *Collembola* identification and mycorrhizae. Specialist training elsewhere was in Rapid Biodiversity Assessment, earthworm, nematode and earthwork taxonomy. Two graduate students have completed, and three have been identified for research on the project. Seven undergraduate research topics have been identified. Awareness of the project has been effected using leaflets, poster and sensitization workshops.

97. Findings
- Links with GCO were at times constrained by lack of communication and decisiveness, with the exception of PIM. The flow of funds was not very smooth. The initial instalment of $65 K in February 2003 was modest given high initial costs, and replenishment only followed in December 2003 when two instalments were received almost at the same time. Also, CIAT fails to alert the Indonesian team that transfers has been effected, holding up expenditures and making Deputy CPC waste time in banks.

- On data sharing, Indonesia abides by the understanding of AM-05 that data on benchmark sites and sampling windows can be shared, but raw data on functional groups abundance and diversity are kept within the team for three years to allow publication of results. As a result, the global database cannot be an output until the lapse of the agreed period.
- Collaboration with ICRAF is satisfactory, but with room for improvement. Co-financing by ICRAF pertains to the publication 'Below-ground…' mentioned above, which brings up the question how 'hard' co-financing really is (as not all costs involved in publishing this book are to be added to the BGBD co financing budget).
- Support by some former TAC members and colleagues from Brazil have been indispensable for the Indonesian team to reach the point where they have arrived now.
- A lesson learned on students is that BSc. students are most useful, as the kind and duration of work expected from them fits the project objectives best.
- The Working Group structure was considered not to be very efficient as activities were clearly country-driven. The team was surprised to see a CPC and GC act as Working Group Conveners, whereas interaction with management of WG 3 and 4 was marginal. The country team instead held a plea for a country-driven structure, with stronger scientific guidance by GCO.
- Often BGBD team members have been invited to training sessions and meetings. However, the official invitations tend to come in late. It takes time to obtain visa and fulfil all formalities for travel. Invitations should arrive at least one month ahead of travel.
- M&E Plan was added 'for information', not as a project tool from the start. Therefore, not much attention was paid to it until AM-04, but the tool is appreciated and will be better used in second tranche.

Kenya

98. Project Progress

- Discussions with the Kenyan team, site visits and the record of outputs and milestones indicate that there were delays in developing a working partnership between participating institutions and this caused a lag in initiating the project activities. Methods agreed during AM-04 have been adopted and used in fieldwork and inventorying, about which 70% has been completed. Inventorying of fungi is yet to be done. Relationships between soil biota and land use intensification are being examined as potential indicators of BGBD loss. Mapping and documentation of benchmark and sample areas is about 30% complete; only data on soils and landuse have been assembled for Embu. No activity has been undertaken on economic valuation.
- Specialist training has been received in earthworm, nematode, termite and mycorrhizae characterization. In-country training is yet to be conducted. Two PhD and 3 MSc students are scheduled to conduct research with the BGBD project. Awareness raising has been effected through 3 national workshops.

99. Findings

- Developing a cohesive partnership requires a bit of time in the early stages of the project and should be budgeted for time-wise. Progress of activities within the project was different depending upon availability of expertise and the type and amount of work involved in characterizing the different organisms.
- Draft methodologies for characterisation were not agreed upon in time to allow timely testing and use in inventorying BGBD. Harmonisation of some of the methods is still an on-going process. As a consequence, progress in data collection proceeded at variable rates for

different disciplines in the project, and issues like seasonal impacts on BGBD were not captured in the first tranche.

- The research approach followed was that of research teams exposing the stakeholders to the project so that they eventually are involved in developing technology options together (participatory experimentation). This is important in realizing the goals of the project. However, the outputs from the first tranche have limited impact and returns to farmers and care must be taken not to lose farmer interest.
- The project facilitated project scientists to participate in short term courses and workshops in areas of methodological deficiencies. However, this was implemented late and, with limited other scientific back-up, contributed to delays in project implementation.
- Researchers noted their involvement with the BGBD project has positively impacted on the way they conduct research. They noted the increased degree of interdisciplinary and inter-institutional involvement and linkages with development actors. They now hope to address a wider range of problems faced by the stakeholders and become more responsive to farmer needs the second tranche.
- BGBD research has started generating successes in form of data and information. Some have already been documented in Journal format and there are plans for documenting more outputs.

Mexico

100. Project Progress

- The Mexican team has sufficient capacity to operationalise BGBD and, as a consequence, milestones on standardized methods have been met, and output documentation is in progress. Field work on inventorying BGBD has been completed and data analysis is about 60% complete. This will form the basis for generating and testing indicators of BGBD loss. Mapping and documentation of benchmark and sample areas is near completion (90%) with the geographical database already established. Seven graduate students are attached to the project.

101. Findings

- Difficulties experienced in the first tranche involved coordinating six institutions with staff who are not full-time on the project; recruiting assistants that could accept low payments and students with no assured scholarships.
- Considerable work is needed to meet the requirements of the BGBD activities, but with no matching funds. It required dedicated and interested personnel who consider this as a challenge and an opportunity to advance career development.
- Communication is irregular; it only builds up toward the annual meetings.
- Taxonomy, economics and biometrics personnel were not readily available to the project
- National Team meets only once per year to minimise expenses, but could have been better with more meetings. Management team meets when necessary to decide on activities and allocation of funds
- There are differences in amount of work in certain BGBD disciplines which, as of necessity, delay others.

Uganda

102. Project Progress

- The research team is made up of scientists, technicians and students from five different institutions and several departments within these institutions. Project activities are being conducted on one benchmark site, including testing of the methods agreed during the AM-04 and concurrent inventorying (60%) of BGBD. Refined methods have been documented but not yet published. Community indicators of BGBD loss have been documented, but not the physicochemical and biological indicators. Economic valuation tools have not been tested. Benchmark and site areas have not yet been mapped, but the geographical database containing soils and landuse has been established.
- Specialist in-country training has been conducted in earthworms and mycorrhizae; training in termites, ants, earthworms, nematodes, mycorrhizae and molecular techniques has been obtained form from other countries. 5PhD and 6MSc students have been selected to research BGBD.

103. Findings

- Draft methodologies for characterisation were not agreed upon in time to allow timely testing and use in inventorying BGBD. Harmonisation of some of the methods is still an on-going process. As a consequence, progress in data collection proceeded at variable rates for different disciplines in the project, and issues like seasonal impacts on BGBD were not captured in the first tranche.
- The research approach followed was that of research teams exposing the stakeholders to the project so that they eventually are involved in developing technology options together (participatory experimentation).
- The project facilitated scientists to participate in short term courses and workshops in areas of methodological deficiencies. However, this was implemented late and, with limited other scientific back-up, contributed to delays in project implementation. Scientists consider that short-term courses are insufficient to turn participants into experts and there still is need for technical back-up or longer term specialised training.
- There have been advantages of having project team members coming from institutions around Kampala which allows for short notice planning and consultative meetings to take place when needed. Prompt reporting to members on outcomes of the Global meetings has enabled quick adjustments to workplans and methods.
- There was expressed frustration at the lack of availability of the “global experts” and limited support from the global Working Groups and Group Conveners.
- There is a Project Office that allows e-communication access and literature search for members who have no office access to e-facilities.

Lessons learned

104. The BGBD Project Document is strong in substance, but ambitious. A global project with the participation of 7 countries **from 3 continents** with different BNP/capita, R&D cultures, government attitudes towards agricultural and environmental R&D, national capacity to properly and timely perform the project activities, runs many risks of not meeting expected outcomes. More specifically, progress rates inevitably differs between countries, which may affect overall progress. The positive scenario is where fast-track countries can move on unhampered and perhaps show more output than anticipated. In the more realistic scenario, the slower participants tend to reduce the overall pace and output. In a multi-continent project this risk seems to be higher than in a regional multi-country project. The lesson is that during appraisal tranches of projects of the size and partnership structure of BGBD, sufficient attention should be paid to constraints and opportunities faced by all participants. Project narratives may be too focussed on the substance, thereby assuming a certain 'average' level of know-how and input from participants.

105. The project organogram proved complicated. The chosen matrix structure did not function as well as it could, that is, the management at country team level had a much stronger position than the management at working group level. Country teams had the advantage of meeting up regularly, and were budget holders. As a consequence, the WG Convenors were not in a position to really 'pull the strings'. Also, the planning of activities rendered WGs 1 and 2 in business, but WGs 3 and 4 relatively idle during the first tranche. For the second tranche, the opposite may be true implying that the structure is not optimal for a project where activities are planned, executed and completed in a specific period of project time. Also, distance between participants, poor internet connectivity in some countries, and different progress rates constrained the effectiveness of Working Groups. The lesson is that in principle, a matrix structure may work well, but only if the project implementation strategy guarantees that all components of the management structure are efficient and effective.

106. National budgets and expenditure and project activities are poorly linked. Budgets are defined by codes that do not relate to the workplan, whereas activities in the workplan have no price. This may (have) cause(d) hidden budget deficits, as funds meant for Outcome 3 in the first tranche (1.2 million US$, 50% of total Outcome 3 allocation) have certainly not been entirely spent on Outcome 3, going by the few delivered outputs under Outcome 3. In the present budget-cum-workplan structure, such developments may go unnoticed as national answerability to GCO on finances and on outputs are separated. The lesson is that the M&E plan should allow joint monitoring of milestones/outputs and levels of budget expenditure. This will also allow a better estimation of cost-effectiveness of projects.

107. Data sharing turned out to be a problem, the magnitude of which was underestimated at project inception. As publication of outputs from the first tranche in highly ranked journals and, to a lesser extent, national journals and proceedings, adds considerably to a researcher's curriculum vitae, the concern is understandable. Although the issue of data sharing was mentioned in the Project Document, it apparently takes a considerabletime to finalize a joint policy, including the relevant protocols. Although it was expected that academic institutions would have experience in dealing with intellectual property rights and related issues, and would be able to come up with a policy quickly, this is not always the case (particularly in the case of multi-country projects). Therefore more work should be done at the PDF stage or at the appraisal stages.

108. On quality of outputs, a listing of constraints, weaknesses and gaps was provided through peer review at AM-05. The lesson learned is that some of them could have been avoided in early stages of the first tranche if proper expertise had been brought on board. In this sense, the BGBD countries (with the exception of Uganda) may have been too optimistic of their own capabilities when going by the expertise tables in the Project Document. Inappropriate know-how in the field of biometrics and late involvement of experts in this field harmed quality of outputs. The lesson is also that a realistic description of the 'baseline' of expertise per country, and an associated needs assessment for technical support, is mandatory to assure quality of output.

Findings and Recommendations

A. Project Aspects

Current status

109. At the time of evaluation, BGBD is in good shape. Although 'sluggish' in the beginning, the rate of progress has increased rapidly, with a series of outputs presentations during AM-05 that pleased and impressed everyone, including the knowledgeable, orally peer-reviewing entourage of champions and supporters of BGBD. The 'jewels' of the first tranche are clearly in the inventory of below-ground biodiversity, and more specifically, the different functional groups. A major added value is the fact that these inventories were performed along a series of agreed-on common methodologies, which strongly enhances chances for high sustainability and replicability. Now that documentation and interpretation is ongoing, it seems 'harvest time' is approaching. In this respect, data sharing constraints have to be handled in the effectively to capture opportunities for early and possibly major impact, if, for example, a cross-cutting paper can be accepted by a leading journal. Completion of the inventory will most likely add immensely to the existing body of knowledge on BGBD, as hypothesized in the Project Document, and it may even reveal things not previously anticipated, as nature often does. Much of the more applied, farmer-managed activities and awareness raising at policy level is only meaningful when outputs from the first tranche are on the table. Without the results of the inventory, BGBD would still be a 'black box' and speculation would defeat understanding.

110. The work done in the first tranche allows many challenging R&D opportunities in the field of soil organic matter and nutrient dynamics, composting, biofertilizer development and use, bioremediation, sustainable farming by cashing in on (interactions between) functional groups at different trophic levels (e.g., biological control of nematodes), fixation of atmospheric N, solubilization of soil P, different yet to be properly valued ecosystem services, all the way to the (in BGBD) undervalued field of bioprospecting.

Project Evolution

111. The project started off on a slowly, given the fact that conceptualization started as early as 1996. After project approval (August 2002), the final MoAs with convening country institutes were signed by January 2003, whereas institutional developments and Global Office appointments at the Executing Agency further delayed the inception of BGBD. As a consequence, output in 2003 fell short of expectations, but a remarkable and commendable 'come back' in 2004, performance improved markedly at all levels. With an agreed extension of the first tranche by 6 months, it led to a shared feeling of satisfaction among participants at AM-

05, the first event in the project where a plethora of country data were presented, compared and discussed among participants.

112. As the first tranche progressed, it became clear that the 7 countries differ considerably in terms of physical and human capacity, in realizing of leverage, e.g., by recruiting students and, as a consequence, in capability to deliver outputs according to plan and of sufficient quality. The latter was particularly noticeable at the level of mesofauna and microfauna characterization, where the 'more advanced' countries had a strong comparative advantage. In some countries, characterization did not surpass the genus level. Thanks to GCO facilitation, members of the former TAG, and South-South linkages within BGBD, countries did not drift too far apart.

113. Annual Meetings turn out to be real triggers of output, as they serve as deadlines at the same time. The multi-country approach further helps in getting the best out of people, as no country wants to look bad in front of the others. On top of that, the approach creates solidarity between countries, and willingness to train each other. Lastly, and perhaps to be better exploited in the second tranche when it is more relevant, 'best practices' in one country on BGBD management may well be tested in others. Bright ideas and innovative ways to establish trade-offs between agricultural use and ecosystem conservation should be exchanged and leaves borrowed mutually. In this way, the whole can become more than the sum of 7 countries.

114. Summaries of observations and findings at country level are given in Chapter III of this report.

Project Objectives

115. Of the Project Objective, the first part of the description, i.e., *'to enhance awareness, knowledge and understanding of below-ground biological diversity'* was realized to a satisfactory extent at the time of evaluation, but will be largely lived up to after results have been documented and undergone quality checks. The second part of the Objective relates to work envisaged during the second tranche. During the first tranche, BGBD did not deviate from the original Objectives. Room for improvement is at the level of Project Goal and Purpose, where the project logframe mentions Performance Indicators that are hard to quantify, particularly on strategy development and adoption.

Project Outputs and Activities

116. At the time of evaluation (April 2005), the Evaluation Team estimated that approximately 65% of the expected outputs and activities has been realized. Interviewing country teams led to an average output level of 75%, but the Evaluation Team observed a bias in reporting towards the 'jewels', i.e., the inventory of below-ground biodiversity, and not to the entirety of scheduled activities. The corrected estimate for End-of-first-tranche (June 2005) is 70% of outputs realized.

117. Standardized 'simple' and 'advanced' methods (1.1) have been agreed on after a long process of consultation, but still have to be properly documented. Benchmark sites were selected and mapped along commonly agreed frameworks (2.1). Whereas fieldwork for the inventory of functional groups (2.2) has been completed or is nearing completion, not all countries sampled the 100 points as earlier agreed, nor do all countries have 2-3 benchmark sites as initially proposed in the Project Document. Macrofauna characterization was completed, but work on

mesofauna and microfauna is still underway in many countries, particularly in those that are behind in expertise and physical infrastructure. A network for information exchange is in existance, and database designs in place, but operational only at the level of a few countries (2.3). Hesitations on data sharing, however, and poor internet connectivity in some countries, currently still renders the developed facilities underutilized.

118. Investment in capacity building (5.1) received much attention during the first tranche, and took effect through workshops and training sessions, some of which were deemed too short to really become semi-expert in a field, and awareness was raised (5.3) through national PACs, leaflets, flyers, and presentations. Although ad-hoc in its approach, most countries made good efforts to make BGBD visible. A total of 160 students got involved in BGBD (5.2), but disparities between countries were large, given the fact that Brazil and India together had 110. Particularly behind schedule are the components on indicators (1.2) and tools for economic valuation of BGBD (1.3). The economic assessment is however mandatory for the second tranche in view of questions such as rehabilitation of degraded lands, increases in crop production and productivity, improvement of food security, and protection of water resources. Substantial preparatory work for Outcome 3 was scheduled, but did not feature prominently in the outputs listed by country teams. This finding is a concern to the extent that GEF budget allocation for Outcome 3, in the first tranche was 50% of the total budget for Outcome 3 for the entire project.

Cost-Effectiveness

119. Outputs per unit project input come close to 90%, as only an approximate 75% of allocated country budgets had been transferred at the time of this evaluation (against an estimated output rate of 65% at the time of evaluation). It was observed though, that convening institutes still had to pay substantial sums of money to partner institutes that did part of the inventory work. Also, funds allocated to Outcome 3 may have inadvertently been used to complete work on other Outcomes. This can, however, not be substantiated as the combination of substance reports and financial statements do not provide such insight. On inputs, expenditure on budget codes relating to Personnel seem (at this stage) to have been relatively high, whereas (too) little has been spent on investment in equipment and other physical infrastructure that could have been part of capacity building.

Impact and sustainability

120. Major impact, in the sense that ‘change’ is visible and quantifiable, is not yet traceable, but can not be realistically expected after 2,5 years of project activities. Chances of impact being realized in the course of and after the second tranche are however clearly visible. Publication of findings on the inventory and the common methodologies, and increased use of the BGBD and country websites may soon be examples of impact.

121. Through extensive preparation and consultation in the pre-project phases, through NPACs, in place in most countries but at quite different levels of intensity, stature and clout, and through co-funding arrangements with partners, BGBD has to some extent been ‘sold’ as an issue of high relevance, and particularly as an issue about which we know stunningly little. Overall visibility of BGBD at (inter)national level and, as a corollary, opportunities for enhanced sustainability needs increased attention, approaches by its ‘mother’ programme ASB constituting a fine

example. Sustainability in BGBD has further been addressed at institute level through targeted capacity building and improved infrastructure, but also through networking with national and international partners, so as to use the best facilities and have work done in places and by people that are best equipped to do so.

Stakeholder participation and ownership

122. The first tranche has been dominated by field sampling and laboratory analysis. Direct involvement of stakeholders had therefore been limited to R&D partners in BGBD and parties that were interested in BGBD from the start or through sensitization workshops. Feedback to farmers and policy makers on inventory of BGBD is rather pointless when data are not yet on the table. Farmers that will be involved in the second tranche demonstrations, and district officers and NGOs in the benchmark areas, however, are well aware of the ins and outs of BGBD. At country level though, Brazil and Mexico paid considerable attention to farmer involvement right from the start of BGBD.

123. Country teams generally expressed high levels of ownership. Positive aspects mentioned by members were their own scientific drive, the ability to make use of their specialized expertise, and the ability to interact and compare results with other institutions within as well as between countries.

Implementation approach/strategy

124. As a whole, the Evaluation Team is of the opinion that staffing at the global level is too modest, and has led to periods of crisis management, lack of time to provide real scientific leadership, and hick-ups in communication. TSBF-CIAT should raise its profile during the second tranche and be given the opportunity to involve more staff members in the project.

125. The project management model for the first tranche worked reasonably well, but workload and communication at the level of the GCO have been and still are constraining. Composition of country teams range from strongly centered around the convening centre, to being a broad mosaic of national expertise (which is more desirable). Country convenors spent between 10 and 85% of their time on BGBD (at least 50% seems desirable).

126. In the matrix structure that the project adopted, country teams (one nation, all disciplines) cut across Working groups (all nations, one discipline). Working Groups (WG) are led by convenors, and operate along ‘task groups’ that take on specific issues that have to be addressed by all countries. The ToR for WGs and WG Convenors is elaborate but at the same time, it is rather non-committal, with few hard outputs listed. Another issue of concern is the limited decision and financial power that is held at the WG level, which goes against the fact that the Global Workplan uses Working Groups as main entry points. Emphasis in the first tranche has been largely on the work to be done under WG 1 and 2. Although the Global Workplan shows a range of activities to be undertaken under WG 3 and 4 during the first tranche, they seemed to have received less empahsis during. Lastly, WG 1 was convened by the Brazil CPC and WG 2 by the Global Coordinator, implying that these convenors wore two hats. Although it does not at all seem to have negatively affected progress, from a management viewpoint it would be better not to have such dual roles.

127. The TAG rather operated as a set of knowledgeable individuals who have been of paramount importance in getting specific components of work off the ground, or provided support in training and guidance. PSC operated according to plan, but PAC did not meet officially until AM-05. It can be concluded that, although individual members have been key informants and facilitators, PAC as a structure did not entirely have the guiding role in the first tranche it was expected to have.

Financial planning

128. Planning and expenditure at the level of GCO was satisfactory with proper stewardship, keeping expenditure close to budget. In most cases at the country levels, BGBD funds are booked in and disbursed from a separate project account, and financial management is the responsibility of one of the researchers. Although this keeps lines of communication short, problems cropped up where UNEP formats differ much from those used by convening institutions. Workplans and budgets at country levels were not linked, allowing too high a level of ad hoc budgetting and spending.

129. Complaints by countries on slow disbursement of funds and lack of communication on impending transfers from CIAT are matched by complaints at GCO on late and incomplete reporting, and the fact shown by financial statements and transfer overviews that most countries hardly ever ran out of funds.

130. The 'Format for cash advance statements' provides summaries of budgetted and spent GEF moneys per country and constitute the basis for transfers of new tranches by CIAT. The Tables in the Format show the budget and its gradual exhaustion per line item during the year, but not for the entire project period. The overall project budget, at the same time, does not provide this level of detail. Moreover, it considers a transfer made by CIAT as an expense, and not the real spending in the countries. Hence, there is an element of monitoring missing, as financial reports should at best show relative budget exhaustion per line item. This constitutes the basis for budget control and, if needed, interventions.

131. Seventy-five percent of GEF funds for the first tranche were spent by the end of 2004 (minus the amounts still in pocket at country level). Co-financing at the end of the first tranche was 86% of the amount envisaged, and 48% of total project co-financing. Additional co-financing was realized during the project. Reporting of co-financing by countries was initially poor and untimely, and was considered a burden rather than an important managerial activity. By the end of the project, though, a very comprehensive and detailed co-financing overview was made available to the Evaluation Team.

Replicability

132. BGBD will be highly replicable once documentation has been completed. The choice to develop and adhere to common methodologies is an open invitation to peer researchers and developers to replicate.

133. Country presentations during AM-05 on possible the second tranche activities showed a considerable range, with focus on agriculture and farming systems, on participatory approaches, again on functional groups, and on ecosystem services. Some countries had ideas worked out in

considerable detail, whereas others just presented one or two slides with general ideas. Replicability is at risk here, and should be secured.

Monitoring and Evaluation

134. At GCO level, the Annual Reports are not only well-structured and informative, but also good use was made M&E tools, providing overall indications of progress, with a modest degree of specificity for countries.

135. At the request of the Evaluation Team, country teams filled out the project table showing milestones and outputs. It was noted that most teams did not perform M&E on a regular basis, but the tools were appreciated and should be mainstreamed at national level. Comparison of tables filled out by countries (Annex IV) shows how useful the tools can be when a real effort is made to make them informative. The way Brazil, Indonesia and Uganda filled out Table 2 of M&E Plan can serve as an example, whereas Mexico is commended for attempting to make the best use of Table 3 of the M&E Plan. The results of this exercise can be used as a basis to improve M&E in the second tranche, and make country teams see the benefits.

B. Overall Project Ranking

135. The Overall Project Ranking is given in Table 11. The ranking is based on findings presented in the main report, and summarized under items 109-134 above. The ranking refers to the status of BGBD **at the end of the 1st Tranche (30 June, 2005).** This implies that a slight, positive correction is employed by the Evaluation Team, as the actual evaluation centered around the Annual Meeting in Manaus in April 2005 (AM-05).

Table 11. Overall project ranking

Criterion	Rating	Remarks
Attainment of Objectives/Planned Results	2	Project stayed close to the Objectives that can be related to 1st Tranche (80%)
Attainment of Outputs and Activities	3	Joint assessment with Country Teams gave 75% realized output, but this strongly relates to Outcome 2.2 (Inventory of BGBD); other unfinished business reduces the overall estimate to 70%
Cost-effectiveness	2	Overall cost-effectiveness seems close to 90%, but some funds meant for Outcome 3 may have inadvertently been used for activities related to other Outcomes; estimate therefore at 80%
Impact	n.a.	At end of (inventory-geared) 1st Tranche, impact is modest. It would however not be fair to assess impact at this stage, as t project was conceived for 5 years, and 2nd Tranche Activities are much more geared towards impact than those of 1st Tranc
Sustainability	3	Through National PACs and other awareness raising activities, sustainability looks promising. There is however, room for improvement at institutional and international level (70%)
Stakeholder Participation	3	Rather limited at farmer level, which is inherent to a project period mainly geared towards Inventory. Brazil and Mexico were leading in having farmers involved. High, however, in having researchers involved in stocktaking. Other stakeholder groups foreseen to contribute during 2nd Tranche (70%)
Country Ownership	3	Strong in sense of scientific drive, opportunities to use expertise, and comparison between institutions and countries. Room for improvement though in broadening networks (70%)
Implementation approach/strategy	3	Project management model worked reasonably well. Matrix structure (working groups - country teams) may be abandonned, workplans and budgets should tally. Given size and complexity of BGBD, GCO did a great job after sluggish start. Some communication problems to be solved though (70%)
Financial planning	3	Planning and expenditure at level of GCO fine, at country level differences are noted, also depending on professional level of treasurer. Cofinancing statements came in late, but are adequate and close to expectations (70%)
Replicability	1	Emphasis on common methdologies, both in selection of benchmark sites and in inventory of BGBD offers great scope for high replicability, but amalgamating this output is still to be done (90%)
Monitoring and Evaluation	2	M&E tools were introduced to the project after inception. GCO makes very good use of tools through Annual Report; Country Teams start using them well now, amongst others in helping the Evaluation Team to assess Milestones and Outcomes (Annex IV); Impact-related part of logframe needs adjustments to enhance quantifiability of performance (80%)
Overall rating	**2**	**When giving all above 10 criteria equal weight, 75% out of a possible 100% is realized.**

n.a. = not applicable

C. Recommendations

Based on the Findings in this Report, and given the currently strong momentum in the first tranche, the Evaluation Team recommends that the second tranche be financed and implemented according to plan, taking into consideration the following specific recommendations.

1. TSBF-CIAT exhibits a clearer dual leadership in the second tranche, i.e., both on Substance (GC-S; research, development, publications), and on Technical matters (GC-T: reporting, financial aspects, M&E, capacity building, baselines, incremental costs, global benefits, impact, sustainability); this requires modest reallocation of the second tranche budget (or use of carry-over funds if any) and the raising of extra cofinancing on the part of TSBF-CIAT; and TSBF-CIAT takes concrete steps to improve communication inside GCO and between GCO and Country Teams.

2. In the Project Organigram (Figure 1), Working Groups and the (already defunct) TAG are removed. Instead, TSBF-CIAT manages a Consulting Fund to help realizing important cross-cutting outputs and outcomes. The consultants work on a specific ToR that stipulates clear and tangible outputs to be realized in a limited timeframe.

3. CPCs spend at least 50% of their time on BGBD. If this can not be realized, CPC should either step down and support BGBD from the sideline, or hand over most responsibilities to a to-be-appointed deputy, who at least handles financial matters, monitors progress, and prepares for Annual Meetings.

4. CPCs and Country Teams do a proper expertise needs assessment (baseline) for the second tranche, and open the doors for broader partnerships as foci of activities change. The project moves from inventory of functional groups to demonstration, ‘best practices’, and influencing policy. the first tranche host institutions keep their lead role, but present a convincing team with new partners that are particularly capable of handling Outcomes 3 and 4. A protective attitude here will be counterproductive.

5. CPCs jointly prepare a strategy paper and plan of action during AM-06 on the added-value of being a global project, i.e., on how the whole can be made into more than the sum of the 7 parts, and on how to become more successful in realizing and enhancing impact, sustainability, stakeholder participation and country ownership.

6. GCO develops a proposal how to assess 'global benefits and incremental costs' in the second tranche. NPACs have a role to play here, by letting BGBD 'sink in' more profoundly in a country or region than the project itself can do. Impact expected from NPAC should be spelled out more clearly, without aiming to bring all NPACs on one footing. Also, an exit-strategy should be made explicit during the early stages of the second tranche, showing how BGBD outcomes can be taken on board by CBD, MDGs, and other international R&D institutions, programs and conventions.

7. CPCs and Country teams internalize M&E instruments in the second tranche. Table 2 and 3 of the current M&E Plan are good starters, but Performance Indicators for Table 3 should be reviewed to become more quantifiable and realistic, particularly on ‘alternative strategies promoted and adopted’. Also on the global information system, clearer performance indicators are needed to measure its impact.

8. GCO and CPCs develop a clear strategy and a code of conduct on (i) securing quality of outputs, (ii) data sharing, (and (iii) publication of project outputs.

9. GCO clarifies how completion of the 30% estimated not-yet-realized 1st tranche output will or will not interfere with implementation of the second tranche (e.g. Outcomes 1.2, 1.3, parts of Outcome 3 and 4; write-ups of 1.1, 2.1, 2.2); and that Outcome 3 is not in danger, now that 50% of its budget seems to have been spent in first tranche.

10. CIAT Financial Office informs Country Teams instantly when transfers have been effectuated. Financial statements by Country Teams in the second tranche are consistent, and show relative exhaustion, periodic expenditure, and balance for each budget code. One should be able to link this information to workplans and achievements. Similarly, the second tranche Workplans are organized according to Outcomes (level 1) and Activities (level 2), and can be linked to budgets and expenditure.

11. For the sake of the Replicability of the second tranche, country workplans follow a series of common lines of thought. The questions below, brought up by GC during AM-05, are strong starters in this respect.

What?

- Conservation and enhancement of both above- and below-ground (components of) biological diversity for improving ecosystem services (environmental benefits); agro-ecosystem management

Where?

- At which scale levels do gradients in BGBD and land use intensity occur and where to intervene?

How?

- To improve diversity and enhance ecosystem services
- *Direct* manipulation, e.g. re-inoculation with desirable indigenous organisms, (such as N2-fixing bacteria or agents for biological control of plant disease which have been lost as a result of intensification methods.
- *Indirect* manipulation of the cropping system (e.g. by choice of plants, the cropping pattern in time and space, or management of organic inputs)

- **Who** and **for whom?**
- BGBD team composition during the second tranche and involvement of stakeholder groups mentioned in the Project Document.

12. Use of M&E tools should be enhanced and improved. The exercise done by all country teams in filling out Milestone and Outputs tables, and (two countries) Activity and Impact tables is a good starting point to make country teams believe that M&E is a useful instrument allowing country teams to do a better and more efficient job.

ACRONYMS

AM	Annual Meeting
AR	Annual Report
ASB	Alternatives to Slash and Burn Programme
BGBD	Below-ground Biodiversity (Project Acronym)
CBD	Convention on Biological Diversity
CGIAR	Consultative Group on International Agricultural Research
CIAT	Centro International de Agricultura Tropical
CP	Country Programme
CPC	Country Programme Convenor
GC	Global Coordinator
GCO	Global Coordination Office
GEF	Global Environmental Facility
ICRAF	World Agro-Forestry Centre
MDG	Millenium Development Goals
M&E	Monitoring & Evaluation
NGO	Non-governmental Organisation
NPAC	National Project Advisory Committee
PAC	Project Advisory Committee
PDF	Project Development Fund
PIM	Project Information Officer
PSC	Project Steering Committee
RUPES	Rewarding Upland Poor for Environmental Services
TAG	Technical Advisory Group
TSBF	Tropical Soil Biology and Fertility Institute
UNEP	United Nations Environmental Programme
WG	Working Group

Annex I. Terms of Reference for Mid-Term Evaluation of the project Conservation and Sustainable Management of Below- Ground Biodiversity (BGBD); GF/2715-02-02-4517, 1st Tranche

BACKGROUND

1.1 The BGBD project is a collaborative initiative among seven countries: Global: Brazil, Côte d'Ivoire, Indonesia, India, Kenya, Mexico, Uganda assisted by the Tropical Soil Biology and Fertility (TSBF) institute of CIAT. Policy guidance and direction are provided by a Steering Committee(SC) and by the Project Advisory Committee(PAC). The Project SC has the responsibility and authority to make decisions concerning all aspects of project management and implementation.The project was initially launched as a five year project implemented in two tranches. The first of these has since been extend with one year and now running from July 2002 to 30 June 2005. The project was launched in November 2002.

The objective of this project is to enhance awareness, knowledge and understanding of below-ground biological diversity (BGBD) important to sustainable agricultural production in tropical landscapes by the demonstration of methods for conservation and sustainable management. The project will explore the hypothesis that, by appropriate management of above- and below-ground biota, optimal conservation of biodiversity for national and global benefits can be achieved in mosaics of land-uses at differing intensities of management and furthermore result in simultaneous gains in sustainable agricultural production. The primary outcomes of the project will be:

1. Internationally accepted standard methods for characterization and evaluation of BGBD, including a set of indicators for BGBD loss.

2a. Inventory and evaluation of BGBD in benchmark sites representing a range of globally significant ecosystems and land uses.

2b. A global information exchange network for BGBD.

2. Sustainable and replicable management practices for BGBD conservation identified and implemented in pilot demonstration sites in representative tropical forest landscapes in seven countries.
3. Recommendations of alternative land use practices and an advisory support system for policies that will enhance the conservation of BGBD.
4. Improved capacity of all relevant institutions and stakeholders to implement conservation management of BGBD in a sustainable and efficient manner.

Since its inception a monitoring, evaluation and dissemination plan (M&E plan) has been put in place.. The general and specific objectives of the project, and the list of its planned outputs and identified indicators, have provided the basis for the M&E plan (attached for information).

The project outputs are monitored through semi-annual consolidated progress reports presented by Project Coordinator to UNEP/DGEF and by the consolidated annual project reports presented at the annual review meeting by Project Coordinator prior submission to UNEP/DGEF. At each annual meeting, the country programmes present their work plans and budgets for the following year. The BGBD steering committee evaluates the documents for consistency with the goals and objectives of the project and approves the annual work programme and budgets. The consolidated annual report is also reviewed to the Project Advisory Committee (PAC). The PAC provides recommendation related to project management and implementation at global level.

It has been planned that the BGBD project will be subjected to external reviews after each tranche to obtain an independent assessment of progress and recommendations for completion of the project. In addition, a final external review will be done at the end of the project to assess its achievements and impacts and make recommendations on how to ensure its long-term sustainability.

1.1 LEGISLATIVE MANDATE

Consistent with OP 13, the project a) addresses the identification and conservation of components of biological diversity important for sustainable use of agro-ecosystems with regard to the list of Annex 1 of the CBD; b) incorporates components of targeted research important for the conservation and sustainable use of biological diversity; c) enhances the enabling environment by providing advice on viable farming practices that conserve and sustainably use agrobiodiversity and developing data and information services.

The project also fully supports the objectives of GEF OP 3 on Forest Ecosystems. Consistent with the priorities of the Programme, the Project will support the conservation and sustainable use of biological diversity in environmentally vulnerable areas and the conservation and/or sustainable use of endemic species.

2. SCOPE OF EVALUATION

The objective of the evaluation is to assess progress in implementing components/activities in the logframe of the project document scheduled for implementation for the first tranche of the project. The evaluation will be conducted as an in-depth evaluation. The evaluation will assess, among other things;

- **Execution performance:** Determination effectiveness and efficiency of project management and supervision of project activities.
- **Delivered outputs:** Assessment the project's success in producing each of the programmed outputs, both in quantity and quality as well as usefulness and timeliness.
- **Project impact.** Evaluation of the project's success in achieving its outcomes.

The evaluator shall make recommendations on how to continue and improve project implementation to ensure awareness and ownership by target stakeholders of best BGBD conservation practices. Furthermore, the evaluation will highlight lessons learned, both positive as well as the negative from the standpoint of the design and implementation of a demonstration project geared towards raising awareness and knowledge of BGBD practices. These lessons learned will be documented in the UNEP/GEF Experience Database (Annex 2 Database Brief).

Indicators identified in the M&E plan and log frame of the project document (Annex 1) will be used and project management indicators of the M&E plan as well as the guidelines on performance indicators provided in the UNEP project manual pp. 13/89-13/99 (available at http://www.unep.org/Project_Manual).

The project will be evaluated on the basis of findings of:

a) Desk review of the project document, outputs, Steering Committee meeting notes, databases, websites, reports;
b) Interviews with UNEP/DGEF Project Management Officer, BGBD project coordinator and Steering Committee members;

c) Interviews with Country Programme Convenors, Working Group chairs and members and sample national executive partners (i.e. farmers, rural communities, NGOs, governmental institutions and private sector)
d) Interviews with donors;
e) Visit and interviews with participants at Steering Committee meeting;
f) Field visits to selected demonstration sites
g) Interviews with project partners and direct beneficiaries;

3. TERMS OF REFERENCE

The evaluator(s) shall:

1. Provide a rigorous assessment of progress made so far with implementation of the BGBD project by establishing to what extent the project's objectives are being met and planned results obtained, taking into account the performance indicators listed in the project logframe (See M&E plan), the extent to which project activities are completed and outputs are attained, particularly focusing on making recommendation for the effective and efficient implementation of the second tranche of the project.

2. Provide a detailed assessment of the various aspects of the project as follows:

- Evaluate the execution performance at this stage of the project including the implementation strategy and governance of the project, i.e. the effectiveness and usefulness of the BGBD project management and implementation structure at global and national levels. The evaluation should make specific reference to:
    - The effectiveness of organizational/institutional arrangements of the project in terms of meeting the needs of participating countries, institutions and stakeholder groups for national project preparation and execution;
    - The effectiveness of project management team (including the Working Groups) in terms of assignment and execution of project activities, particularly at the effectiveness of the management/execution arrangements, including the provision of technical support;
    - The effectiveness of the monitoring mechanisms and management system employed throughout the project's lifetime so far;
    - Identification of administrative, operational and/or technical problems and constraints that influenced the effective implementation of the project and present recommendations for operational changes.

- Establish BGBD project's success in producing each of the programmed output, both in quantity and quality, timeliness and usefulness.
- Review the appropriateness of performance indicators in consultation with all project partners, Projects Coordinator, Country Program Convenors, members of the Steering Committee and the Project Advisory Committee, and UNEP/DGEF Project Management Officer and recommend where necessary revisions.
- Evaluate the project's success so far and likelihood of achieving planned objectives, in particular contribution towards inventory and evaluation of BGBD in benchmark sites; development of internationally accepted standard methods for characterization and evaluation of BGBD, identification of sustainable BGBD management practices that will be basis for development of policy recommendation during the second tranche of the project.

- Determine the level of stakeholders' participation. Attention should be paid to the type and level of participation by various stakeholders at different stages of the project implementation, the appropriateness and usefulness of the innovative participatory and integrated natural resource management (INRM) approach and facilitation of the exchange of technologies and information among farmers, working groups especially of women, communities, scientists, development practitioners, and policymakers.
- Determine the actual building of capacity achieved so far in terms of enhancing institutional capacities, monitoring, building of effective partnerships, and building of capacity of stakeholders in conservation and sustainable and effective management of BGBD.
- Assess the extent to which awareness and acceptance has been created about the project among the all stakeholders.
- Examine the country ownership of the project. Attention should be paid to the relevance of project and impact on national development and environmental agendas, regional and international agreements, and recipient country commitment.
- Assess synergy created by this project as part of a regional programme that addresses biodiversity issues of local, regional and global significance and linkages established to other projects and activities related to the CBD, GEF OP#13, OP#3 and other UNEP and GEF activities.
- Determine from the point of view of adaptive project management the effectiveness of the institutional structure, financial planning including the level of co-financing both cash and in-kind, the staffing, administrative arrangements and operational mechanisms at the project level;
- Determine the sustainability arrangements in place, in particular the commitment of Governments at policy and operational levels through co-funding and the need for developing a resource mobilization strategy in the next tranche of the project.
- Review the monitoring and evaluation system as an effective management tool of the project. Attention should be paid to the identification of baselines and indicators, quality of backstopping, quality assurance, and control of deliverables.
- Assess the future replicability of the project, in other countries taking into account arrangements and steps taken so far in this respect.
- Identify lessons learned and best practices so far and the potential benefit for the second tranche.
- Provide recommendations to UNEP and its executing partners regarding the project workplan for the purposes of enhancing the achievement of project objectives and outcomes in the next tranche.

4. EVALUATION REPORT FORMAT & PROCEDURES

The evaluation report shall be a detailed report, written in English, of no more than 30 pages exclusive of the executive summary, the lessons learned, and the findings and recommendations and include:

- Executive summary (no more than 3 pages)
- A detailed evaluation report
- Separate section on lessons learned
- Separate section on findings and recommendations
- All annexes should be typed.

The success of project implementation will be rated on a scale of 1 to 5 with 1 being the highest rating and 5 being the lowest. The following items should be considered for rating purposes:

- Attainment of objectives and planned results
- Attainment of outputs and activities
- Cost-Effectiveness
- Impact
- Sustainability
- Stakeholder participation
- Country ownership
- Implementation approach/strategy
- Financial planning
- Replicability
- Monitoring and Evaluation

Each of the items should be rated separately and then an overall rating given. The following rating system is to be applied:

1 = Excellent	(90 % - 100 % achievement)
2 = Very Good	(75 % - 89 %)
3 = Good	(60 % - 74 %)
4 = Satisfactory	(50 % - 59 %)
5 = Unsatisfactory	(49 % and below)

The ratings will be converted under separate sheet to the GEF rating system of: Highly Satisfactory (80%-100%), Satisfactory (65%-79%), Marginally Satisfactory (50%-64%), Unsatisfactory (49%- and below), and N/A.

5. OUTPUTS OF THE EVALUATION

The final report shall be written in English and submitted in electronic form in MS Word Format by 22 May 2005, and should be addressed as follows:

Mr. Segbedzi Norgbey,
Chief, Evaluation and Oversight Unit
UNEP, P.O. Box 30552
Nairobi, Kenya
Tel.: (254-20) 623387
Fax: (254-20) 623158
Email: segbedzi.norgbey@unep.org

With a copy to:

Mr. Jeroen Huising
BGBD project coordinator
Tropical Soil Biology and Fertility (TSBF) institute of CIAT
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The evaluation report will be printed in hard copy and published on the Evaluation and Oversight Unit's web-site www.unep.org/eou.

6. RESOURCES AND SCHEDULE OF EVALUATION

Under the guidance of the Chief of Evaluation and Oversight Unit (EOU) and in close co-operation with the BGBD project coordinator, Tropical Soil Biology and Fertility (TSBF) institute of CIAT based in Nairobi, Kenya, the Director, Division of Global Environment Facility (DGEF) UNEP and Project management Officer for the project in DGEF in Nairobi, Kenya, the evaluator shall undertake a detailed review and evaluation of the first three-year tranche of the BGBD project. The evaluation shall be conducted by external consultants in consultation with the EOU during the period from 14 March 2005 to 22 May 2005.

In accordance with UNEP/GEF policy, all GEF projects are evaluated by an independent evaluator contracted by the EOU, and not associated with the implementation of the project. The evaluator should have the following qualifications: (i) Basic expertise in tropical soil biology, biodiversity conservation, natural resources management and capacity building ii) Experience with project execution in a developing country context (iii) project evaluation experience.

The contract will begin on 14 March 2005 and end 22 May 2005 (5 weeks spread over ten weeks). The consultants will submit a first draft to EOU by 30 April 2005. A draft version will be forwarded to the BGBD project coordinator at TSBF, CIAT, the Director of UNEP/GEF and the Project Management Officer of the project in UNEP/GEF for initial comment. Comments to the final draft report will be sent to the consultants after a maximum of 2 weeks. After incorporating the comments, the consultant will submit the final report by 22 May 2005.

The Project Coordinator will accompany the external consultant appointed by UNEP during the field visits. The lead evaluator will travel to Kenya, Indonesia and Brazil. The lead consultant will also participate in an Annual review and Steering Committee Meeting in Brazil.

Annex II: Description and timing of expected milestones and outputs by project component

Project Components		Outputs (O) and Milestones (M)
Outcome 1. Internationally accepted standard methods for characterisation and evaluation of BGBD, including a set of indicators for BGBD loss.		
Outcome 1.1. Standardized methods	M	Methods selected (mm: 09; yr: 01)
	M	Methods tested (mm: 12; yr: 01)
	O	Methods documented (mm: 03; yr: 02)
Outcome 1.2. Indicators agreed and tested	M	Indicators BGBD loss agreed (mm: 03; yr: 02)
	M	Indicators BGBD loss tested (mm: 12; yr: 02)
	O	Validated indicators for BGBD loss (mm: 12; yr: 03)
Outcome 1.3. Tools for economic valuation	M	Economic valuation workshop (mm: 02; yr: 01)
	M	Tools tested in case study (mm: 01; yr: 02)
	O	Tools evaluated and documented (mm: 12; yr: 02)
Outcome 2. Inventory of BGBD		
Outcome 2.1 Benchmark areas and sample areas mapped and documented	O	Interpretation of satellite imagery or aerial photos finalized and land use mapped (mm: 09; yr: 01)
	O	Geographical database containing data on soils land use etc, established (mm: 12; yr: 01)
Outcome 2.2. Inventory of BGBD	M	Sampling frames established (mm: 08; yr: 01)
	M	Inventory of at least one of the benchmark area per country concluded (mm: 04; yr: 02)
	M	Field data analysed and reported (mm: 08; yr: 02)
	O	Data on inventory included in national and global database (mm: 10; yr: 02)
Outcome 2.3. Global Information Exchange Network	M	Network for information exchange established (mm: 10; yr: 01)
	M	Data base design completed and implemented (mm: 03; yr: 02)
	O	Database fully operable; data content accessible (mm: 8; yr 02)
Outcome 3. BGBD management practices		
Outcome 3.1. Demonstration sites selected	M	Demonstration sites selected and farmers participation secured (mm: 12; yr: 02)
	M	Management practices selected with farmer input (mm: 12; yr: 02)
Outcome 3.2 Farmer BGBD management practices	M	Demonstration sites established and operational (2nd Tranche of the project)
	O	Results form demonstration sites evaluated (2nd Tranche of the project)
Outcome 4. Policy advisory system		
Outcome 4.1 Policy obstacles identified	O	Review of policies concluded (2nd Tranche of the project)
	O	Review of international conventions with relevance to BGBD (tranche 2 of the project)
	M	Policy tools identified (2nd Tranche of the project)
Outcome 4.2. Policy negotiations	O	Policy briefs published (2nd Tranche of the project)
	M	Alternative land use systems recommended (2nd Tranche of the project)
	O	Decision support system for policy decisions (2nd Tranche of the project)
Outcome 5. Capacity building		
Outcome 5.1. Selective training courses	M	Specialist in country training activities in soil biology conducted (mm: 12; yr 01)
	M	Specialist training activities in special techniques and methods (south-south and north-south) (during both tranches of the project)
Outcome 5.2. Students selected	O	Research themes identified and proposals written (mm 02; yr 02)
	M	Students selected (mm: 04; yr: 02)
Outcome 5.3. Awareness raising	O	Poster and leaflets distributed, sensitisation workshop conducted (both tranches of the project)
	O	Policy documents

Annex III: Project publications, reports, training workshops and press releases

Books (including special issues of journals)

1. Kenya Society of Microbiology (2004). Special issues with selected topics on below-ground biodiversity in Kenya. Journal of Tropical Microbiology, Vol. 3, Nr. 1,
   October 2004. (The Kenyan BGBD review with the following articles:
2. Okoth, S.A. (2004). An overview of the diversity of micro-organisms involved in decomposition in soils, Journal of Tropical Microbiology, Vol. 3, Nr. 1, p 3 -13.
3. Kimenju, J.W., D. M. Muiru, N. K. Karanja, W.M. Nyongesa, D. W. Miano and G. K. Mutua (2004). Assessing the role of organic amendments in management of root-knot nematodes on common bean, Journal of Tropical Microbiology, Vol. 3, Nr. 1, p 14-23.
4. Kimenju, J.W., N. K. Karanja and W.M. Nyongesa (2004). Diversity and abundance of nematodes in agroecosystems of Kenya. Journal of Tropical Microbiology, Vol. 3, Nr. 1, p 24-33.
5. Kahindi J. H. P., N. K. Karanja, D. Odee and F.B. Mwaura (2004). The diversity of biological nitrogen fixing systems in Kenya, Journal of Tropical Microbiology, Vol. 3, Nr. 1, p 35-47.
6. Jefwa, J. M., L. M. Mwangi, D. Odee and G. Mugambi (2004). Preliminary studies on mycorrhizal symbioses in plant conservation, forestry and farming systems in Kenya, Journal of Tropical Microbiology, Vol. 3, Nr. 1, p 48-62
7. Fragoso, C. and P. Reyes-Castillo (eds.), 2001. Diversidad ,function y manejo de la biota edafica en México. Acta Zoologica, nueva serie número especial 1, Instituto de Ecologia A.C., Xalapa, Mexico.
8. Gafur, A., F.X. Susilo, M. Utomo and M. Van Noordwijk (Eds.), 1999. Proceedings of the workshop "Management of Agro biodiversity in Indonesia for Sustainable Land Use and Global Environmental Benefits". ASB-Indonesia Report Number 9, Agency for Agricultural Research and Development, Bogor, Indonesia.
9. Ramakrishnan, P.S. K.G. Saxena. K.S. Rao and R.K Maikhuri, (eds), (in press). Soil Biodiversity, Ecological Processes and Landscape Management. Oxford & IBH Publishing Co. Pvt. Ltd., New Delhi, India
10. Susilo, F.X., A. Gafur, M. Utomo, R. Evizal, S. Murwani, & I G. Swibawa (eds.) 2004. Conservation and Sustainable Management of Below-ground Biodiversity in Indonesia. Universitas Lampung Press, Bandar Lampung. (ISBN: 979-8287-69-X).

Newsletters

1. BGBD Bi-annual newsletter of the TSBF-CIAT, Vol. 1, Issue 1, February 2004.

Internal reports

1. BGBD Brazil, 2003. Relatório do segundo workshop nacional (Report of the second national workshop), Benjamin Constant, 7-10 April, 2003, Brazil
2. BGBD Cóte d'Ivoire, 2003. National start-up workshop report, 26-27 May 2003, Abidjan, Côte d'Ivoire.

3. BGBD Cóte d'Ivoire, 2003. Methods workshop report, 16-17 June 2003, Abidjan, Côte d'Ivoire.
4. BGBD Indonesia. 2003. National Workshop Report, May 30-31, 2003, Bogor Indonesia. By: M. Utomo, F.X. Susilo, I.G. Swibawa and S. Murwani.
5. BGBD Indonesia. 2004 Implementation and evaluation of CSM-BGBD programme in Indonesia, National Workshop Report, November 28-30, 2004, Bogor, Indonesia. By: M. Utomo, F.X. Susilo, I.G. Swibawa and S. Murwani and A. Karyanto.
6. BGBD Mexico, 2003. Informe II taller del proyecto "Conservación y manejo sostenible de la biodiversidad bajo del suelo, Augosto 11-13. Instituto de Ecologia A.C., Xalapa, Mexico.
7. BGBD Mexico, 2003. Taller de diagnostico rural participativo ejido Adolfo López Mateos, 24-30 October, 2003, Catemaco, Mexico
8. BGBD Mexico, 2003. Taller de diagnostico rural participativo ejido San Fernando, 5 -8 November, 2003, Soteapan, Mexico
9. BGBD Mexico, 2003. Taller de diagnostico rural participativo ejido Venustiano Carranza, 5-8 November, Tatahuicapan, Mexico.

Progress reports

1. Global Coordinating Office

1. CSM- BGBD annual progress report 2003 (P_4rep/glb/04_3)
2. CSM-BGBD Technical report December 31, 2002.
3. Semi-annual progress report to UNEP Jun 2003 (ref.PR/GLB/HYR/2003_1)
4. Semi-annual progress report to GEF Jun 2003 (ref.PR/GLB/HYR/2003_2)
5. Semi-annual progress report to UNEP Dec. 2003 (ref. PR/GLB/HYR/2003_3.3)
6. Semi-annual progress report to GEF Dec 2003 (ref. PR/GLB/HYR/2003_4)
7. Semi-annual progress report to UNEP Jun 2004 (ref. PR/GLB/HYR/2004_1)
8. Semi-annual progress report to GEF Jun 2004 (ref.PR/GLB/HYR/2004_2)

2. Brazil

1. Semi-annual progress report Aug'02 - Jun'03, (ref. PR/BRA/2003_1)
2. Semi-annual progress report Jul'03 - Dec'03, (ref. PR/BRA/2003_2 -/- (RPT-NAT/BRZ04_1)
3. Semi-annual progress report Jan'04 - Jun'04, (ref. PR/BRA/HYR/2004_1)
4. Semi-annual progress report Jul'04 - Dec '04 (ref. PR/BRA/RPT/2004_2)

3. Cote d'Ivoire

1. Semi-annual progress report, Aug'02 - Jun'03 (ref. PR/CDI/HYR/2003_1, PR/CDI/HYR/2003_2
2. Semi-annual progress report, Jul'03 - Dec'03 (ref. PR/CDI/ANN/2003_3, PR/CDI/ANN/2003_4

3. Semi-annual progress report Jan'04 - Jun'04, PR/CDI/HYR/2004_1, PR/CDI/HYR/2004_2, PR/CDI/HYR/2004_3, PR/CDI/HYR/2004_4

4. India

1. Semi-annual progress report Aug'02 - Jun'03 (ref. RPT-INA/03_1, RPT-INA/03_2)
2. Semi-annual progress report Jul'03 - Dec'03 (ref. PR/INDI/HYR/2003_2, PR/INDI/HYR/2003_1)
3. Semi-annual progress reportJan'04 - Jun'04, (ref. RPT-INA/04_6, RPT-INA/04_7, RPT-INA/04_8, RPT-INA/04_9, RPT-INA/04_10)
4. Semi-annual progress report Jul'04 - Dec '04 (ref. PR/INDI/RPT/04_11)

5. Indonesia

1. Semi-annual progress report Aug'02 - Jun'03 (ref. PR/INDO/HYR/2003_1, PR/INDO/HYR/2003_2)
2. Semi-annual progress report Jul'03 - Dec'03 (ref. PR/INDO/HYR/2003_3, PR/INDO/HYR/2003_4, PR/INDO/ANN/2003_1, PR/INDO/ANN/2003_2)
3. Semi-annual progress report Jan'04 - Jun'04 (ref. PR/INDO/HYR/2004_1, PR/INDO/HYR/2004_2)
4. Semi-annual progress report Jul'04 - Dec '04 (ref. PR/INDO/HYR/2004_3, PR/INDO/HYR/2004_4)

6. Kenya

1. Semi-annual progress report Jul'03 - Dec'03 (ref. RPT-KEN/04_1)
2. Semi-annual progress report Jan'04 - Jun'04 (ref. RPT-KEN/04_3, RPT-KEN/04_4)

7. Mexico

1. Semi-annual progress report Jul'03 - Dec'03 (ref. PR/MEX/HYR/2003_1)
2. Semi-annual progress report Jan'04 - Jun'04 (ref. PR/MEX/HYR/2004_1)

8. Uganda

1. Semi-annual progress report Aug'02 – Dec’02 (ref. PR/UGA/HYR/2002_1)
2. Semi-annual progress report Jan’03 - Jun'03 (ref. PR/UGA/HYR/2003_1)
3. Semi-annual progress report Jul'03 - Dec'03 (ref. PR/UGA/HYR/2003_2)

4. Semi-annual progress report Jan'04 - Jun'04 (ref. PR/UGA/HYR/2004_1)

MSc thesis

1. Conceição, Ederson Jesus da, 2003. Diversity of Leguminosae nodulating bacteria at three land use systems in Alto Solimões, AM region. Federal University of Lavras, Brazil.
2. Maria Leticia Coria Martinez, 2004. Influcia de la Deforestacion y el Manejo sobre las Comunidades de Lombrices de Tierra (Annelida: Oligochaeta) de Milpas y Pastizales en el Volcan de Santa Martha de Los Tuxtlas, Veracruz. Universidad Nacional Autonoma de Mexico, Facultad de Ciencias

Press releases, journal and newspaper articles, TV coverage and other project documents

Global

1. November 28, 2002. Press conference in London. Covered in a wide range of journals across the globe.

Brazil

1. October, 2002. Interview of Dr. Fatima Moreira published in the UFLA bulletin, Brazil
2. November 11, 2002. Interview of Dr. Moreira for UFLA television, Brazil.
3. May 2003. Interview of Dr. Sidney Sturmer published in the FURB bulletin, Brazil
4. July 2003.Interview of Dr. Fatima Moreira published in the "Ciência e Cultura" (Journal of the Brazilian Society of Science Progress)

Cote d'Ivoire

1. May 27th, 2003. Article in "Le Jour" in relation to the start-up workshop held in Abidjan.
2. June 3rd, 2003. Articles in the daily newspapers "Fraternité-Matin" and "Notre-Voie", in relation to the start-up workshop.
3. July 15th. Broadcast on national radio of the conference on soil biodiversity

Annual Meeting Documents and Papers (Manaus 2005)

Benchmark area descriptions and socio-economic characterization

1. Characterization of Benchmark sites in India
   Balakrishna Gowda, U.M. Chandrashekara, M.P. Sujatha and R.K. Maikhuri

2. Benchmark description: Lampung, Indonesia
   Afandi, M. Utomo and d. Mizwar
   Land use & Socio-economic Characteristics of the Sumberjaya BA
   Rusdi Evizal, S. Bududarsono and H. Ismono

3. Los Tuxtlas Benchmark area description and sampling approach
   José Antonio Garcia, Simoneta Negrete-Yankelevitch
   Socio-economic characterization of three communities of the Los Tuxtlas area
   Isabelle Barois

4. Characterisatin of land use types in the Mabira Forest ecosystem, Uganda
   G. Lamtoo and M. J. N. Okwakol
   Socio-economic characteristics and indicators of below-ground biodiversity in Mabira Forest ecosystem, Uganda
   E. Balirwa, B. Mugonola and G. Byandala

5. Land use land cover mapping using high resolution images of The Upper Solimões River, Benjamin Constant Municipality, Am, Brazil
   Elaine Cristina Cardoso Fidalgo (1), Maurício Rizzato Coelho (1), Fátima M. S. Moreira (2), Fabiano de Oliveira Araújo (1), Humberto Gonçalves dos Santos (1), Maria de Lourdes Mendonça S. Brefin (1).

6. The Physical Environment With Emphasis in Upland Soils of The Upper Solimões River, Benjamin Constant Municipality, Am, Brazil.
   Maurício Rizzato Coelho, Elaine Cristina Fidalgo, Fabiano of Oliveira Araújo, Humberto Gonçalves dos Santos, Maria of Lourdes Mendonça Santos Brefin
   EMBRAPA Solos, RJ.

7. Flora survey in Upland Soils Of The Upper Solimões River, Benjamin Constant Municipality, Am, Brazil
   Hiroshi Noda(1), Ieda Amaral(1), Ayrton Urizzi(2), Danilo Fernades da Silva Filho(1), Francisco Manoares Machado(1), Jucélia Oliveira Vidal. (1)

8. Land-use mapping and typology in Oumé benchmark site (Centre-West Côte d'Ivoire)
   N'DoumE C1, GnessougoU N1, Tondoh J E2, TANO Y3.

9. Demographic and socio-economical characterisation of the Oumé benchmark area (Centre-West Côte-d'Ivoire)
   Ogni K. B1, Ibo J2, Agnissan A A1

10. Morphological and physical characteristics of soils along a gradient of land use intensity in Center-West Côte-d'Ivoire
    Angui P.K.T.11 Tie B.T2., Tamia J.A1., Assie K. H1., Danho D. M1

11. Impact of human activities on floral diversity in the Oumé Region (Centre-West Côte d'Ivoire)
    N'Guessan K. E; Ake-assi L; Kouassi K. E; Assi Y. J; Sagne C.

12. Land use and biophysical characterization of below-ground biodiversity (bgbd) benchmark site in kenya
    E.M. Muya, N. Karanja, H.Roimen, and B. Mutosotso

Results of the inventory of soil macro fauna

13. Termite Diversity in a Range of Land Use Types in Sumberjaya
    F.X. Susilo and F.K. Aeny

14. Ant Diversity in a Range of Land Use Types in Sumberjaya
    F.X. Susilo and Hazairin

15. Beetle Diversity in a Range of Land Use Types in Sumberjaya
    F.X. Susilo, A.M. Hariri, Indriyati, and L. Wibowo

16. Earthworm Diversity in a Range of Land Use Types in Sumberjaya
    W.S. Dewi and Sri Murwani

17. Biodiversity of the Macrofauna in Santa Marta los Tuxtlas , Veracruz México.
    Isabelle Barois, Martín de los Santos, Simoneta Negrete-Yankelevich and Jose Antonio Garcia

18. Inventory of Earthworms in the Los Tuxtlas benchmark area.
    José Antonio Garcia

19. Ants and termites abundance and diversityin three location within lox Tuxtlas BA
    Simoneta Negrete-Yankelevitch

20. Coleoptera in Santa Marta Los Tuxtlas, Veracruz, Mexico
    Miguel A. Morón & Roberto Arce (Isabelle Barois)

21. Effects of land use change on the diversity and abundance of earthworms in a tropical high forest ecosystem in Uganda
    Nkwiine C, Okwakol M J N, Rwakaikara M S and Akol A

22. Effects of land use change on the diversity and abundance of soil macrofauna (termites, ants and beetles) in a tropical high forest ecosystem in Uganda
    Alemu S O, Akol A and Okwakol M J N

23. The abundance and diversity of earthworms and termites in the BGBD benchmark sites.
    G.H.N.Nyamasyo; M. Kibberenge and Fred Ayuke.

24. Diversity of earthworm along a gradient of agricultural landscape in Centre-West Region of Côte d'Ivoire
    Tondoh E. J1, Monin L 1, Tiho S2, CSUZDI C3

25. Diversity of termites and ants along a gradient of land-use in a tropical forest margins (Oumé, Côte d'Ivoire)
    Konate S.1; Tra-bi S.C.2; Adja A.N2; Katia S.C.1; Kolo Y.1 & Tano Y.2

26. Composition Of Soil Macro-Invertebrates Communities In Different Land Use Systems In Alto Solimões, Brazil
    Sandra Celia Tapia-Coral & José Wellington Morais

27. Community structure of ants in different land use systems in the upper Solimões River – AM
    Ronald Zanetti1, Nívia Dias1, Mônica Silva Santos1, Márcia Lídia Gomide1, Jacques Delabie2

28. Scarabaeidae (Insecta: Coleoptera) community structure in different soil use systems in the the upper Solimões River – AM.
    Silva, P.H.; Louzada, J.N.C.; Shiffler, G

29. Diversity of Termites in diverse Land Use Systems in Benjamin Constant Municipality, AM, Brazil.
    Agno Accioly(1) and Reginaldo Constantino(2).

30. Inventory of macrofauna in different land use systems in the Nilgiri and Nanda Devi Biosphere Reserve in India
    Radha D. Kale, N.G. Kumar, B.K. Senapati, R.V. Varma and R.K. Maikhuri

Results of the nematodes and meso-fauna inventory

31. Collembola Diversity in a Range of Land Use Types in Sumberjaya
    Cahyo Rahmadi and I Gede Swibawa

32. Nematode Diversity in a Range of Land Use Types in Sumberjaya
    I Gede Swibawa (F.X. Susilo)

33. Nematodes in Los Tuxtlas
    Pilar Rodrigeuz Gusmán

34. Sampling of the mesofauna of Sierra de Santa Marta in Los Tuxtlas Veracruz, México
35. Isabelle Barois, Martín de los Santos, Antonio Angeles, José Antonio García and Patricia Rojas.

36. Effects of land use change on the diversity and abundance of soil nematodes in Mabira forest ecosystem, Uganda
    Namganda J, Bafakuzara D and Nabulya G

37. Effects of land use change on the diversity and abundance of soil Mesofauna in Mabira forest ecosystem, Uganda
    Akol A, Alemu S O and Lamtoo G

38. Inventory of mesofauna in different land use systems in the Nilgiri and Nanda Devi Biosphere Reserve in India
    R.V. Varma, B.K. Senapati, N.G. Kumar and R.K. Maikhuri

39. Response of the nematode communities to different land-use systems in the upper solimões river basin in northern brazil.
    Cares2, J. E. & Andrade2,, E. P.

40. Density and diversity of soil meso-invertebrates in different land use systems, in Alto Solimões, Amazonas, Brazil.
    José Wellington de Morais & Sandra Celia Tapia-Coral

41. Effects of various land uses on nematode communities in Côte d'Ivoire

42. Collembola Diversity in a Range of Land Use Types in Sumberjaya
    Cahyo Rahmadi and I Gede Swibawa

43. Nematode Diversity in a Range of Land Use Types in Sumberjaya
    I Gede Swibawa (F.X. Susilo)
44. Nematodes in Los Tuxtlas
    Pilar Rodrigeuz Gusmán

45. Sampling of the mesofauna of Sierra de Santa Marta in Los Tuxtlas Veracruz, México
    Isabelle Barois, Martín de los Santos, Antonio Angeles, José Antonio García and Patricia Rojas.

46. Effects of land use change on the diversity and abundance of soil nematodes in Mabira forest ecosystem, Uganda
    Namganda J, Bafakuzara D and Nabulya G

47. Effects of land use change on the diversity and abundance of soil Mesofauna in Mabira forest ecosystem, Uganda
    Akol A, Alemu S O and Lamtoo G

48. Inventory of mesofauna in different land use systems in the Nilgiri and Nanda Devi Biosphere Reserve in India
    R.V. Varma, B.K. Senapati, N.G. Kumar and R.K. Maikhuri

49. Response of the nematode communities to different land-use systems in the upper solimões river basin in northern brazil.
Cares2, J. E. & Andrade2,, E. P.

50. Density and diversity of soil meso-invertebrates in different land use systems, in Alto Solimões, Amazonas, Brazil.
José Wellington de Morais & Sandra Celia Tapia-Coral

51. Effects of various land uses on nematode communities in Côte d'Ivoire
Gnonhouri G. P1, Nandjui J2, Adiko A1

Results of the inventory of leguminosae nodulating bacteria, arbuscular mycorrhizal fungi (and ectomycorrhiza).

52. Leguminosae nodulating bacteria in four land uses from Santa Marta Los Tuxtlas.
Esperanza Martínez, Lourdes Lloret , Pablo Vinuesa (Dora Trejo)

53. Land Use and Diversity of Arbuscular Mycorrhizal Fungi in Mexican tropical ecosystems
Varela, L.1, D. Trejo2, F.J. Álvarez3, I, Barois 4, E. Amora-Lazcano5, P. Guadarrama3, L. Lara2, D. Olivera3, I. Sánchez-Gallén3, W. Sangabriel3, R. Zulueta2.

54. LNB Diversity in a Range of Land Use Types in Sumberjaya
R.D.M. Simanungkalit and Agus Karyanto
AMF Diversity in a Range of Land Use Types in Sumberjaya
Yadi Setiadi, Noor Faiqoh, and Agus Karyanto

55. Charaterization of Phaseolus vulgaris, Glycine max and Macroticlum atrapurpereum nodule bacteria under different land use types in Mabira forest ecosystem, Uganda
Rwakaikara M S, Zawedde J and Kizza C L

56. Impact of land use change on the diversity and abundance of Mycorrhiza in Mabira forest ecosystem, Uganda
Mutumba G, Serani S and Lamtoo G

57. Morphological diversity of AM fungi isolated from the TENE area in Center-West Côte d'Ivoire
ZEZE Adolphe, Ouattara Brahima and Zabouo Armand

58. Investigation of rhizobia ressources in the TENE region in Center-West Côte d'Ivoire
Koné Kinanpara, ZEZE Adolphe, Kimou Akomian

59. Assessment of diversity of legume nodulating bacteria (LNB) in Nilgiri and Nandadevi Biospheres of India
A. N. Balakrishna, M. Balasundaran2, R. K. Singh3, R.K. Maikhuri4, S. Shanker1, Devyani Sen3, S. Binisha2 & A. Chandra4

60. Diversity of AM fungi across a gradient of land uses in Western Ghats and Nanda Devi biosphere
A.N. Balakrishna, R.K. Maikhuri and K.V. Sankaran

61. Density and diversity of associative diazotrophic bacteria in soils under diverse land use systems in Amazonia

62. Fátima M. S. Moreira,: Rafaela Nóbrega, Adriana Lima, Alexandre Barberi, Krisle da Silva, Ligiane Florentino

63. Diversity of leguminosae nodulating bacteria from three different land use systems in
Brazilian Western Amazon

64. Ederson da Conceição Jesus(1), Ligiane Aparecida Florentino(1), Maria Isabel Dantas Rodrigues(1), Marcelo Silva de Oliveira(2) e Fátima Maria de Souza Moreira(1)

65. Diversity of Leguminosae nodulating bactéria in diverse Land use systems in the upper Solimões River Basin, Benjamin Constant Municipality, AM- Brazil by using three trap species.

66. Fátima M. S.Moreira(1), Adriana S.Lima(2), Alexandre Barberi(2 Ligiane Florentino(3), Paulo Avelar Ferreira(3), Michele Aparecida da Silva(3), Marlene A de Souza(4), Marcelo de Oliveira(5)

67. Diversity and community structure of arbuscular mycorrhizal fungi in several land use systems in the Amazon.
Sidney L. Stürmer(1), José O. Siqueira (2), Carlos R. Grippa (1), Patricia Alves(1), Glaucia Alves Silva(1).

68. Abundance and growth characteristics of legume nodulating bacteria in Embu and Taita benchmark sites of Kenya
David W. Odee1*, E. Makatiani1, Nancy Karanja2 and James Kahindi3

Results of the inventory on pathogenic and antagonistic fungi and insect pests

69. Inventory and diversity of soil-borne plant pathogenic fungi in the biosphere reserve of los Tuxtlas, Veracruz, Mexico.
María del Pilar Rodríguez-Guzmán and Grisel Negrete-Fernández.

70. EPF and PPF Diversity in a Range of Land Use Types in Sumberjaya
Darmono Taniwiryono and Titik Nur Aeny
SDF Diversity in a Range of Land Use Types in Sumberjaya
Iswandi Anas, Titik Nur Aeny, and Joko Prasetyo (F.X. Susilo)

71. Relative abundance of pathogens in different land use types in the Mabira forest ecosystem, Uganda
Akol A and Alemu S O

72. The diversity and abundance of entomopathogenic fungi in relation to land use in Mabira forest ecosystem, Uganda
Serani S and Akol A

73. Monitoring diversity of microfungi in soils under different conditions of land-use
Ludwig H. Pfenning, Lucas M. de Abreu, Mirian Salgado, Larissa Gomes da Silva, Janine Mendes de Oliveira, Anderson R. Almeida, Ricardo T.G. Pereira

74. Inventory of entomopathogenic nematodes and fungi on soil samples.
Alcides Moino Junior, Ricardo Souza Cavalcanti, MSc, Vanessa Andaló,

75. Diversity of fruit flies (Diptera: Tephritidae) and potencial impacts on traditional agroforestry systems in the upper Solimões River- AM.:
Dr. Neliton Marques, Frederico Vasconcelos, Alexandra Priscila Tregue

76. Characterization of soil fungi in different agro-ecological units in Center-West Côte-d'Ivoire
Abo K., Diallo A.H.., Koffi N. B. C., Ganiyu K., Babacauh, K.D., and Agneroh A. T.

77. Characterization of saprophytic fungi in the Nilgiri Biosphere Reserve in India
A.N. Balakrishna

78. Land use systems and distribution of Trichoderma species in Embu
Sheila Okoth

Review of standard methods

79. Standard methods for the inventory of earthworms
    Jérôme Tondoh

80. Standard method for the inventory of ants and termites
    Souleymane Konate

81. Methods of Below-ground Mesofauna Inventory
    Agus Karyanto and F.X. Susilo

82. Methodology for soil nematode diversity evaluation
    Huang, S. P. (in memoriam), Cares, J. E. & Andrade, E. P.

83. Standard methods for the inventory of LNB
    Fatima Moreira

84. Standard methods for endo- and ecto-mycorrhizal fungi
    A.N. Balakrishna

85. Standard methods for the inventory of phyto-pathogenic and antagonistic fungi
    Sheila Okoth

86. Standard methods for the inventory of fruit flies
    Neliton Marques

Ecosystem services and soil quality indicators

87. Introduction to the session Tasks of the ESERV task force and summary of the discussions on methods for ecosystem service,
    Edmundo Barrios.

88. BGBD and farmer appreciation of Ecosystem Services
    Jo Anderson

89. Carbon stocks under different land uses in Oumé Region (Center-West Côte d'Ivoire)
    Yao K.M1, Abbadie L2, Konate S1, Benest D2.

90. Assessing soil morphology: a simple and robust method to evaluate the role of soil ecosystem engineers and other soil structuring processes
    Elena Velasquez and Patrick Lavelle

91. Soil engineering by Arbuscular Mycorrhizal Fungi
    E. Barrios and M. Rillig

92. Qualitative distribution of soil agregates
Maria da Glória B. F.Mesquista, Mauricio Coelho, Fernanda Perechi, Maria Tereza Carvalho (Fatima Moreira)

93. Evaluation of soil fertility in different Land Use Systems in upland soils of The upper Solimões River, Benjamin Constant Municipality, Am, Brazil
Sonia Alfaia, Fernanda Villani, Katell Uguen, Acácia Neves, José Edvaldo Chaves,

94. Integrated control of subterranean pest in South America
Andreas Gaigl

Analyses of BGBD at landscape level and land use intensity

95. Land Use Intensity of CSM-BGBD Sumberjaya Window, Lampung Benchmark, Indonesia
Rusdi Evizal1, Suseno Budidarsono2, F. Erry Prasmatiwi3

96. Operationalisation of the Land Use Intensity Index: the Mexican case
Simoneta Negrete-Yankelevich and Tajín Fuentes-Pangtay

97. Proposal of a spatial analysis of BGBD project data: up scaling from point to global scale in three steps, Simoneta Negrete-Yankelevich

98. Spatial analyses and scale aspect to inventory of BGBD
Richard Coe

Economic valuation case study

99. Economic evaluation of production systems in the OUME Region (North-West Côte d'Ivoire)
Barry M.B. and Kouadio E.

100. Conservation and breeding in situ: contributing to the preservation of traditional knowledge/ Social economic aspects of The Upper Solimões River, Benjamin Constant Municipality, Am, Brazil
H.Noda and S.Noda

Project 2nd Tranche Planning Session

101. The BGBD project's data base; implementation by the Global Coordinating Office and Participating Country Programmes
P. Okoth

102. Portal BiosBrasil, and online training course software R.
Fatima Moreira

103. Framework for development of proposals for the second tranche of the project
Jeroen Huising

104. Plans for the second tranche of the Mexican BGBD programme
Isabelle Barois

105. Plans for the second tranche of the Brazilian BGBD programme
Fatima Moreira

106. Plans for the second tranche of the Cote d'Ivoire BGBD programme
Jerome Tondoh

107. Plans for the second tranche of the Indonesian BGBD programme
Felix Susilo

108. Plans for the second tranche of the Indian BGBD programme
K.G. Saxena

109. Plans for the second tranche of the Kenya BGBD programme
J.H.P. Kahindi, N. Karanja, E. Muya, S. Okoth, J. Kimenju, B. Mutsoso, J. Jefwa, D. Odee, and J. Ramisch

110. Plans for the second tranche of the Uganda BGBD programme
Mary Okwakol

111. Data sharing and intellectual property rights
Peter Okoth

Training Workshops

1. Earthworm Taxonomy and Ecology Nairobi, (15th to 21st November, 2004).
The course included an introduction to the systematics and biogeography of earthworms, the basic morphology plan of earthworms (i.e., metameric annelids, coelomated, few setae, with a trend towards cephalization), earthworm distribution, limitant factors of earthworms (moisture, temperature, edaphic variables), the habitat of earthworms (soils, litter, logs, suspended soils, large scale patterns (ecological, taxonomic, continental distributions i.e, Africa (Etiopic), America (Neotropical and Neartic), Europe (Paleartic), Asia (Oriental), and Australia. The participants were also given a course in earthworm classification. Recent trends were also taught, i.e. the phylogenetic process.

Organized by the Global Coordinating Office and the Kenyan BGBD Team
Facilitated by Dr. Carlos Fragoso and Dr. Csaba and Csuzdi

2. Nematode Training Nairobi, (6th to 12th December, 2004)
This was an overview step by step on CSM-BGBD methods and the practical training on the nematode extraction from soil, made the procedures clear for all the trainees. Lectures and laboratory sections were intended to build basic knowledge on nematode morphology in order to follow correct use of taxonomic keys. Abundant and updated literature materials and references, for identification of soil nematodes were supplied during the training.

Organized by the Global Coordinating Office and the Kenyan BGBD Team
Facilitated by Prof. Juvenil Enrique Cares, Ph.D.

3. Termites and Ants Training, (14th to 18th February, 2005)
Organized by the Global Coordinating Office and the Kenyan BGBD Team
Facilitated by Professor David Bignel and Dr. Gary Alpert

4. Mychorrhiza Training (15th to 21st November, 2004)
The training course included a review of the mandatory and optional methods for studying AMF for the BGBD project, the taxonomy of AMF based on morphology, new terminologies used in the taxonomy of AM fungi and the importance of the number of layers in the spore wall and germinal walls, and the pregermination structures. The theories were followed by practicals where the participants had the opportunity to microscopically observe the spore structures as and when the same was projected on a screen and explained. The participants were allowed to take some of the slides for their future reference. Molecular approaches for the identification of AMF were also taught. Protocols for the extraction of DNA and amplification of 18S rRNA and ITS region by PCR were presented. Gel electrophoresis of DNA was also presented. The theories were followed by practicals in which DNA from the spores of 4 AMF. A detailed account on the taxonomy of ectomycorrhizal fungi was also presented. Manuals and powerpoint presentations were given to the participants for use in the own countries.

Organized by the Global Coordinating Office and the Indian BGBD Team
Facilitated by Professor David Joseph Bagyraj, Dr. Sidney Sturmer, Dr. G.S. Prasad, Prof. K. Natarajan and Dr. Joyce Jefwa

Annex IV. Project milestones and outputs per country, and project overall performance for Indonesia, Kenya and Uganda

A. Brazil

BRAZIL – Outputs and Milestones Tranche I

OUTCOME 1.

dardized methods

M-1 Methods selected; researchers responsible for each functional group participated actively in the discussion to define the methods. Members of the Brazilian Team were responsible for Task Groups LNB, nematodes, entomopathogenic nematodes, fruit flies, mesofauna and phytopathogenic and antagonistic fungi

M-2 In Brazil, only for LNB the method was partially tested in the benchmark area before the inventory. Methods for other functional groups were methods currently used and well established.

O-1 Except ectomycorrhiza, all proposed methods listed during AM-04 were documented

cators agreed and tested

M-1??

M-2??

O-1??

ls for economic valuation

M-1 During the 2nd and 3rd National workshop, socio-economic aspects were discussed amidst the other subjects. Some researchers were identified (Alexandre Ribeiro and Peter May), who demonstrated interest to participate in BGBD, but have not started contributing to the project yet

M-2??

O-1??

OUTCOME 2.

2.1 Benchmark areas and sample areas mapped and documented

O-1 Benchmark area documented and interpreted by LANDSAT images from 1986 to 2001 and IKONOS 2004. Those images are available in the Portal BiosBrasil. Report on LUS were presented at AM-04 (Embu, Kenya), at the 3rd National Workshop in Benjamin Constant in February 2005 and at AM-05 (Manaus, Brazil).

O-2 Land use and land cover was characterized according to the Global coordinator guidelines and statistical analyses and database being carried out. Partial results were reported at the Portal BiosBrasil, 3rd National Workshop Report and AM-04 and AM-05. A Soil Map for sample frame 6 (Windows number 6 – pasture and secondary forest) in the benchmark area is being completed

2.2 Inventory of BGBD

M-1 All sample frames (windows allocation) were established in the benchmark area (Jan–Feb 04) as well as the respective sampling points by theodolits and GPS, with participation by members of each community sampled (farmers from Nova Aliança and Guanabara)

M-2 Inventory was concluded for all functional groups (March-Sep 2004) in 6 sample frames (Windows) and 101 sampling points. For nematodes and earthworms, additional sample collection will be carried out in some sampling points to confirm previous data.

Determination of soil physical and chemical characteristics and soil classification was partially concluded.
M-3 Field data partially analyzed and reported in the 3rd National Workshop in February 2005 and during AM-05. For nematodes, fruit flies, termites, identification is completed; for AMF, mesofauna, ants, macrofauna, Scarabeid beetles, plant, LNB, identification is still underway
O-1 Inclusion of raw data on the National Database is being prepared for most functional groups. Data are already incorporated for nematodes

2.3 Global Information Exchange Network

M-1 Brazil developed the Portal BIOSBRASIL (www.ufla.biosbrasil.br) containing information on benchmark areas, curriculum vitae of researchers, documents like Global and National Reports, Statistical Software "R" training course, links to each participant Institution within the country as well as to BGBD, GEF, UNEP, and TSBF-CIAT webpages. The information is currently available in Portuguese only, but an English version is under construction.
M-2 The database frame is being developed by the team of Marcelo Oliveira, a project member situated at the Universidade Federal de Lavras
O-1 Operation and completion of database is expected by the end of tranche I.

OUTCOME 3.

3.1 Demonstration sites selected

M-1 One selected site for demonstration will be established in Nova Aliança community (farmers already agreed). Other demonstration sites are in the process of being selected.
M-2 Management practices with farmers inputs were identified in the 3rd National Workshop, and included pest and disease control, management practices to correct for soil characteristics that constraint plant growth, inoculation of selected staple crops with LBN and AMF

3.2 Farmer BGBD management practices

M-1 By the start of the second tranche, sites in Nova Aliança within crop areas will have been selected and demonstration plots established
O-1 Tranche 2.

OUTCOME 4.

4.1 Policy obstacles identified

O-1 Review of policies, including Laws and Decrees of the Brazilian Federal, State and Local Government completed. One member of the Team, Henrique Pereira, the Manager of IBAMA (Brazilian Institute of Environment), is always keeping the project uptaded with new policies
O-2 Review of international conventions of relevance to BGBD including Agenda 21 completed

4.2 Policy negotiations

M-1 During 1st Tranche, all land use systems in the Benchmark area were included (except the ones in Flooded Plains) and therefore there is no prevision to include alternative land use systems.
O-2 National Project Coordinator is always in contact with Braulio Dias, the Secretary of Ministry of Environment, with Henrique Pereira, the Manager of IBAMA, and agents from the Ministry of Agriculture and Ministry of Foreign Affairs

OUTCOME 5.

5.1 Selective training courses

M-1 Most researches in the project already had a good expertise on their field of work. Only in few cases, researches had to be trained. Wellington Morais and Sandra Tapia-Coral participated in a training course on Earthworms identification, Maria da Gloria participated in a training course on Soil micromorphology, Fatima Moreira participated in a training course on LBN molecular biology technique. Besides that, a training course over the internet is being carried out for all researchers and students on Statistical Software "R".

M-2 Dr. Juvenil Cares conducted a training workshop on general techniques and nematodes identification in Kenya (Dec. 2004) , Dr. Sidney Stürmer was a resource person in a training workshop on mycorrhiza in India (March 2005) and Dr. Reginaldo Constantino conducted a training workshop on termites identification in Brazil (2004). During the 3rd National Workshop, all researchers presented preliminary results for each functional group for members of communities, undegraduate students and policy maker representatives (total of 104 participants).

5,2 Students selected

O-1 Since start of BGBD, 70 undergraduate, M.Sc. and D.Sc. student and technicians have been involved in the project List of students and technicians can be found at the Portal BiosBrasil.

5.3 Awareness raising

O-1 Two workshops held in the Benchmark area, the last one in March 2005 following the National Workshop for members of the communities from the benchmark area, undergraduate students of Universidade do Estado do Amazonas and Universidade Federal do Amazonas, and policy maker representatives of Benjamin Constant municipality. Before and during the inventory, meetings were held with members of the participants communities. In all cases, awareness of BGBD was incorporated in the discussion and explanations sections

O-2 Literature survey for Laws and Decrees was finished. Henrique Pereira, manager of IBAMA, is part of the Team

Points raised during discussions with Country Team at AM-05:

- This was the first project involving different institutions (7 in all) and many scientists from different disciplines (31 in all). Because it is internationally funded, it gives it that status/back up for seeking local funding. For these reasons, there is a lot of interest in its success as panacea to more inter-institutional collaborative projects
- Brazilian co-funding in form of scholarships has been substantial, reason for the large number of students on the project.
- There is a decentralised approach to planning for the research activities: needs were spelt out in the beginning by the team leaders. Funds are released to researchers to minimise on bureaucracy but institutional commitment letters holds them responsible.
- Brazil is large, the benchmark site is far away from the cities, and scientists come from institutions that are far apart. This has led to sampling being done within a given window period rather than at the same time which would make it difficult to get the scientists together.

- Communities have been involved in the inventorying exercises. This has been made to work largely by the technicians on-site linking the project with the communities.
- The project has equipped the laboratories, and has linked well with existing national programmes
- Complaints on inefficiency in the TSBF office were tabled. Slow in communication
- Taken leadership in the south-south training programmes. Highlighted that the training periods were not enough to develop capacity of trainees to generate meaningful data
- Commended the Country Convener as being responsible, dedicated and available, but recommended decentralisation of some decisions to the National Committee .

B. Côte d'Ivoire

COTE D'IVOIRE – Outputs and Milestones 1st Tranche

OUTCOME 1.

1.1 Standardized methods

M-1 Characterisation selected after discussion during project meetings (AM-03, and AM-04), and by email

M-2 Characterisation tested in the field (Oumé benchmark site)

O-1 Done (see CD-Rom of 'Standard Project Methods for the Inventory of below-ground Biodiversity'

1.2 Indicators agreed and tested

M-1 In progress (identification of soil organisms collected in the field and analyses are in progress). BGBD loss indicator will be determined at the end of identification and analyses

M-2 Not yet

O-1 Not yet

1.3 Tools for economic valuation

M-1 Workshop was held in 2003, but tools for economic evaluation are not yet clearly identified.

M-2 Not yet

O-1 Not yet

OUTCOME 2.

2.1 Benchmark areas and sample areas mapped and documented

O-1 Done (BA1: Oumé; BA2: Taï). Interpretation of satellite imagery done.

O-2 In progress, and presented at AM-05

2.2 Inventory of BGBD

M-1 Done. Full grid drawn for BA-1, and land use mapping finalized (presented at AM-05)

M-2 Done. Inventory of Oumé concluded in 2004

M-3 Done, but no report available yet. Identification and analyses are ongoing for some functional groups

O-1 Not yet

2.3 Global Information Exchange Network

M-1 In progress

M-2 In progress
O-1 Not yet

OUTCOME 3.

3.1 Demonstration sites selected

M-1 Tranche 2
M-2 Tranche 2

3.2 Farmer BGBD management practices

M-1 Tranche 2
O-1 Tranche 2

OUTCOME 4.

4.1 Policy obstacles identified

O-1 Tranche 2
O-2 Tranche 2

4.2 Policy negotiations

M-1 Tranche 2
O-2 Tranche 2

OUTCOME 5.

5.1 Selective training courses

M-1 Workshop was held on Soil Biology for Sociologists in CDI
M-2 Workshops on earthworms, nematodes, termites and ants

5,2 Students selected

O-1 3 Bachelors students, 9 Master students, 7 PhD.

5.3 Awareness raising

O-1 Sensitisation of public awareness done and to be continued (see Annual Reports 2003 and 2004)

- before, during and after start-up meeting (national newpapers, radio and television, 2003)
- information bulletin of Université de Cocody
- visits and discussion with stakeholders (benchmark areas and national levels)

O-2 Not yet

Points raised during discussions with Country Team at AM-05:

- Did not have all expert personnel, e.g in fungi, nematodes and arthropods. Attending training courses in such fields at different times held back the programme.
- Too much of the funds for training were being drawn from other project lines (even though release of funds at country level is adhoc!) and this could impact on research activities. There should be advance funds for training.
- Project Implementation Committee meets twice a month and makes decisions and allocations.
- Release of funds from the global office is slow.
- Limited co-funding especially in support of students.

C. India

INDIA – Outputs and Milestones Tranche I

OUTCOME 1.

1.1 Standardized methods

M-1 achieved

M-2 achieved

O-1 training manual under preparation, 60% task completed

1.2 Indicators agreed and tested

M-1 agricultural productivity and soil physical-chemical properties viewed as indicators of loss of BGBD

M-2 data required for analysing BGBD – crop yields/soil properties relationship collected

O-1 not yet completed

1.3 Tools for economic valuation

M-1 fixed on May 5-6, 2005

M-2 tools tested in case study will be discussed and further improved upon on May 5-6, 2005 workshop

O-1 in pipeline

OUTCOME 2.

2.1 Benchmark areas and sample areas mapped and documented

O-1 completed

O-2 completed

2.2 Inventory of BGBD

M-1 completed

M-2 70% completed

M-3 partly done – given in december, 2004 report/April 11-17, 2005 meeting

O-1 national data base is being established; task only partly completed

2.3 Global Information Exchange Network

M-1 national information exchange network established

M-2 partly achieved

O-1 achieved

OUTCOME 3.

3.1 Demonstration sites selected

M-1 achieved

M-2 achieved

3.2 Farmer BGBD management practices

M-1 partly achieved

O-1 partly completed

OUTCOME 4.

4.1 Policy obstacles identified

O-1 Tranche 2

O-2 Tranche 2

4.2 Policy negotiations

M-1 Tranche 2

O-2 Tranche 2

OUTCOME 5.

5.1 Selective training courses
M-1 several training exercises organized
M-2 partly achieved (about 50 scientists participating)
5,2 Students selected
O-1 yes, continued process (about 40 students)
5.3 Awareness raising
O-1 sensitisation activities undertaken
O-2 results will be presented to policy makers on June 21-23, 2005; the review of soil biodiversity research in India published as a book by Oxford & IBH, New Delhi, India reflects on policy dimension also

Points raised during discussions with Country Team at AM-05:

- Sites set up in two biosphere reserves with variable biodiversity and farming systems determined by relief and climate
- At least 6 institutions, mainly universities, and 50 scientists are involved in the project. About 50 students are conducting research related to BGBD, receiving stipend and tuition from other sources like the University Grant Commission and the Science and Industrial Research Centre.
- The National Steering Committee decides how funds are utilised; they transferred from the Convening institution to participating institutions accordingly. The India team considered that the global office was quite efficient for this type of project and personnel at the centre.
- The team consider that co-financing brings on board institutions with varied interests, resulting in evaluation of work by many, and therefore an improvement in quality
- India decided to conduct inventory on biodiversity organisms that are only relevant to their country…has implications for the global data.
- There was praise for the country convener, but recommended more clout when necessary, e.g. to save time.

D. Indonesia

INDONESIA – Outputs and Milestones Tranche I

OUTCOME 1.

1.1 Standardized methods

M-1 Completed: Standard methods agreed in Bogor meeting (May 2003, Ref # 13, page 22-23) and agreed in Embu meeting (Feb 2004, Ref # 13a, page 85-86)

M-2 Completed: Sumberjaya (Mar 2004), Jambi (May 2004) Ref # 24/26

O-1 Completed: Draft I ready for editing & proof-reading (Ref # 30)

1.2 Indicators agreed and tested

M-1 Completed: Food-web model (Ref # 31a) agreed and Velasquez model (Ref # 31b) agreed in national workshop II November 2004 Bogor (Ref # 14)

M-2 Food-web model & Velazquez model field tested in Sumberjaya 15 Feb – 5 March 2005 (Ref # 32)

O-1 Tranche 2

1.3 Tools for economic valuation

M-1 Completed: global workshop held in Quissac, France in February 2003 (Ref # 34)

M-2 Completed: Technical meeting on LNB valuation (Case I), Bogor Aug 2004 (technical meeting term of reference Ref # 35; technical meeting report Ref # 36

O-1 Completed: LNB economic valuation book (draft I, Ref # 37)

OUTCOME 2.

2.1 Benchmark areas and sample areas mapped and documented

O-1 Completed: Ikonos imagery for Sumberjaya gridded and interpreted resulting in land use maps (2000 & 2004), accessability map, landform map, drainage pattern map, slope map, land unit map (Ref # 47)

O-2 Completed: GIS contains georeference, altitude, slope, land use types, road access, biota data presented and operable

2.2 Inventory of BGBD

M-1 Completed: Standard sampling methods agreed in Bogor meeting (May 2003, Ref # 13, page 22-23) and agreed in Embu meeting (Feb 2004, Ref # , page 85-86)

M-2 Completed: Field work for inventory for Sumberjaya (Lampung Benchmark) concluded in March 2004 and for Jambi Benchmark in May 2004 (Ref # 24/26)

M-3 Completed: Manuscripts reported and written (Ref # 58)

O-1 A prototype database developed and presented (Ref # 59)

2.3 Global Information Exchange Network

M-1 Participation in listserve and electronic discussion forum

M-2 A prototype developed and presented (Ref # 59)

O-1 Database software operable (Ref #59)

OUTCOME 3.

3.1 Demonstration sites selected

M-1 Proposal developed. Representative farmers have been informed and consulted for their participation.

M-2 Proposal for Tranche II developed considering local knowledge and need.

3.2 Farmer BGBD management practices

M-1 Tranche 2

O-1 Tranche 2

OUTCOME 4.

4.1 Policy obstacles identified

O-1 Tranche 2

O-2 Tranche 2

4.2 Policy negotiations

M-1 Tranche 2

O-2 Tranche 2

OUTCOME 5.

5.1 Selective training courses

M-1 GIS training, February 1-29, 2004, Surakarta (1 person). Training of Acari, August 3-6, 2004, Bogor (1 person). Collembola identification, October 18-29, 2004, Bogor (4 persons). Mycorrhiza training, December 13-15, Bogor (2 persons).

M-2 Rapid Biodiversity Assessment course, Oct 2003, Sabah, Malaysia (2 persons). Earthworm taxonomy training, Nov 15-21, 2004, Nairobi Kenya (2 persons). Nematode taxonomy training, Dec. 6-12, 2004, Nairobi Kenya (2 persons). Mycorrhizal fungi training, March 21-15, 2005, Bangalore India (2 persons).

5,2 Students selected

O-1 PhD thesis (earthworm UNIBRAW) written (Ref # 95)

MS thesis (termite UNIBRAW) written (Ref # 96)

PhD thesis (nematode UNIBRAW) identified (Ref # 94)

2 MS thesis identified (macrofauna UGM & AMF UNILA)

7 Undergraduate theses identified (coffee pest, fruit flies, trichoderma, earthworm, UNILA)

Ms. W.S. Dewi (PhD earthworm)

Mr. I Gede Swibawa (PhD nematode)

Ms. F.K. Aini (MS termite)

Ms. S. Rahayu (MS macrofauna)

Ms. U. Kalsum (MS mycorrhiza)

A. Subroto (BS coffee pest)

E. Pramono (BS coffee pest)

D. Widiastuti (BS fruit fly)

Angraini (BS fruit fly)

E. Sitepu (BS Trichoderma)

Merlita (BS earthworm)

S. Resmi K. (BS earthworm)

5.3 Awareness raising

O-1 1 leaflet printed (1000 units) with 500 distributed; 3 leaflets ready by May 3rd (1000 units); 1 poster printed (1000 units) & ready for distribution (Ref # 89)

Sensitization dialog / workshop with various stakeholders held :

- Watershed forum (Ref # 105a)
- Local government officials (Ref # 105b)
- School children & teacher (Ref # 106)

- Studium generale of taxonomy (Ref # 105c)
- University of Kentucky professors (Ref # 105d)
- Universitas Brawijaya professors & students (Ref # 105e)
- Centre of Soil & Agroclimate Research staffs (Ref #105f)
- Bogor Agricultural Univ. Dept. Plant Protection professors & students (Ref # 105g)

O-2 Tranche 2

Points raised during visit of Evaluator ES to Indonesia:

Management & Implementation Structures

The Indonesia Country Programme structure is composed of a CPC, a Deputy CPC, and a Financial and Logistics Officer (which are the Vice-Chancellor of UNILA and three researchers respectively). Together with the four national working group representatives, they constitute the National Project Implementation Committee (NPIC). The research team is made up of scientists from Universitas Lampung (BGBD host institution), and a series of universities and research centres in Bogor, Malang and Yogjakarta, also including ICRAF. Partners are rather given specific duties, such as Rhizobium, mycorrhiza, and plant-pathogenic funghi characterization. In general, UNILA has the better expertise and infrastrucutre on macrofauna and the Java-based partners on microfauna. The group at UGM in Yogjakarta has, like UNILA, worked in ASB. Overheads required by institutions range between 6 and 10%. The NPAC (known as NAT in Indonesia) is made up of three eminent scientists, two of them retired with an long international career behind them, and able to oversee the potential role of BGBD in Indonesia. NAT has joined to the field, and meetings are held when there is a felt need. The CPC devotes about 10% of time to the project. BGBD in Indonesia started off officially in August 2002, but MoA with CIAT was signed in December 2002. In February 2003, AM-03 was held in Indonesia.

Project sites

Presently, the project is conducted on two sites, i.e., Sumberjaya and Jambi, both in Southern Sumatra.

Project Progress

The year 2003 was regarded as inefficient, but the year 2004 as fruitful and challenging. The Outputs and Milestones Table indicates considerable progress in the development of methods and capacity to operationalise BGBD. Outputs are estimated as 100% (fieldwork), 80% (inventory Sumberjaya), 60% (inventory Jami, and Methods Book). Database structure development (based on some web-based Freeware, and following training by GCO) is at 75% completion. At having received two-thirds of the funding against the above Outputs, the team considers itself to operate highly cost-effective. The country team (with assistance from other departments in UNILA than the one hosting BGBD) develops its own database structure, but compatibility with global database seems not to be in danger. Collaboration with ICRAF led to a chapter in the CABI publication 'Below-ground interactions in tropical Agro-ecosystems', with Deputy CPC as main author.

Findings

1. Flow of funds was not very smooth. The initial installement of 65 K$ in February 2003 was modest given high initial costs, and replenishment only followed in December 2003 when two installments were received almost at the same time. Also, CIAT fails to alert the Indonesian team that transfers have been effectuated, holding up expenditures and making Deputy CPC waste time in banks.
2. On data sharing, Indonesia abides by the understanding of AM-05 that data on benchmark sites and sampling windows can be shared, but raw data on functional groups abundance and diversity are kept within the team for three years to allow publication of results. As a result, the global database remains rather undertutilized on the part of the Indonesia team.
3. Collaboration with ICRAF is satisfactory, but can still be improved as facilites and know-how in Jambi are better tapped by UNILA. Co-financing by ICRAF pertains to the publication 'Below-ground…' mentioned above, which raises the question how 'hard' co-financing really is (as not all costs involved in publishing this book are to be added to the BGBD cofinancing budget).
4. Links with GCO were at times constrained by lack of communication and decisiveness, with the exception of PIM.
5. Support by some former TAG members and colleagues from Brazil has been indispensible for the Indonesian team to reach the point where they have arrived now.
6. Student numbers (12) are on the lower end compared to other countries. There has, however, not been a clear policy to attract them, something that can still be changed in the second tranche. A lesson learned on students is that BSc. students are most useful, as the kind and duration of work expected from them fits the project objectives best.
7. The Working Group structure was found not to be very efficient. Activities were clearly country-driven. The team was surprised to see a CPC and GC act as Working Group Convenors, whereas interaction with management of WG 3 and 4 was marginal. The country team instead held a plea for a country-driven structure, with stronger scientific guidance by GCO.
1. Often BGBD team members have been invited to training sessions and meetings. However, the official invitations tend to come in late. Like other countries, it takes time to obtain visa and fulfil all formalities for travel. Invitations should arrive at least one month ahead of travel.
2. M&E Plan was added 'for information', not as a project tool from the start. Therefore, not much attention was paid to it until AM-04, but the tool is appreciated and will be better used in the second tranche.

Identified Challenges

1. Economic valuation should really come off the ground as the Indonesian team has a highly qualified resource economist attached to the BGBD team.
2. UNILA has been strongly in the drivers' seat, but has to broaden the partnership for second tranche, when the project moves from taxonomy and inventory to farming systems and policy influencing. Currently, UNILA has appointed its own

staff to oversee Outcome 3 and 4, but it is recommended to make maximum use of know-how in Yogjakarta and at ICRAF for the best result. On the latter, particularly the RUPES methodology offers prospects for BGBD second tranche.

3. Stakeholder participation and Sustainability are major issues to be addressed in the second tranche.

Overall assessment

The team makes a mature and motivated impression. Presentation of outputs and impacts following the M&E framework was clear and exhaustive, as can be seen from the Tables added to this document.

E. Kenya

KENYA – Outputs and Milestones Tranche I

OUTCOME 1.

1.1 Standardized methods

M-1 All recommended standard methods in Swift and Bignell for earthworms, terimtes, ants, nematodes, mesofauna, rhizobia, and mycorrhiza a method by Bagyaraj and for the pathogenic and antagonistic fungi a method by Mibey

M-2 All recommended standard methods were used for all functional groups except winkler method for ants, formalin method for earthworms, MPN method for mycorrhiza. Used different host plant for AMF soil traps. For phytopathogenic and anatagonistic fungi, molecular method not yet done and other pathogenic fungi (*Phytophthora*, *Rhizoctonia* and *Fusarium*) to be done.

O-1 A contribution of methods on phytopathogenic and antagonistic fungi

1.2 Indicators agreed and tested

M-1 All the functional groups mentioned above

M-2 All the functional groups mentioned above

O-1 Parasitic nematodes abundance increases with land use disturbance and antagonistic fungi (tricorderma) low abundance with land use intensification. Other indicators still being evaluated.

1.3 Tools for economic valuation

M-1 The expert in this area left the project and has been replaced only recently

M-2 No tools have been tested in case study

O-1 No tools have been evaluated and documented

OUTCOME 2.

2.1 Benchmark areas and sample areas mapped and documented

O-1 Interpretation of satellite imagery or aerial photos and land use mapping not complete

O-2 Geographical database containing data on soils land use etc, established; Database established for Embu. For Taita not complete.

2.2 Inventory of BGBD

M-1 BGBD Standard sampling procedures used for all functional groups

M-2 Inventory of the two benchmark site is still in progress.

M-3 Field data partially analysed and reported

O-1 Data on inventory not yet included in national and global database

2.3 Global Information Exchange Network

M-1 Network for information exchange established

M-2 Data base design not yet completed and not yet implemented

O-1 Database not operational.

OUTCOME 3.

3.1 Demonstration sites selected

M-1 Demonstration sites proposed and farmers participation has been secured

M-2 Problem issues identified with farmers

3.2 Farmer BGBD management practices

M-1 Tranche 2

O-1 Tranche 2

OUTCOME 4.

4.1 Policy obstacles identified

O-1 Tranche 2

O-2 Tranche 2

4.2 Policy negotiations

M-1 Alternative land use systems suggestions made for use as demonstration plots (tranche 2 of the project)

O-2 Tranche 2

OUTCOME 5.

5.1 Selective training courses

M-1 Specialist in country training activities in soil biology not conducted

M-2 Specialist training activities in special techniques and methods during Tranche I: training in earthworms (north-south) (November 2004), nematodes (south-south) (December 2004), termites and ants (north-south) (February 2005) and mycorrhizae (south-south) (March 2005)

5.2 Students selected

O-1 Two PhD students (earthworm and termites) and three MSc. students in pathogenic fungi (Pythium), nematodes, policies. Proposal submitted to University and BGBD country office

5.3 Awareness raising

O-1 Technical and National Stakeholder workshops conducted (February 2002, April 2004, February 2005)

O-2 Policy documents are not yet available

Points raised during visit of the evaluators to Kenya:

Management & Implementation Structures

The Kenya Country Programme has structures modelled according to the design of the Global BGBD Project. There is one CPC, two deputies, one for each project site, and a finance management officer. Together with functional group leaders, they form the National Project Implementation Committee (NPIC). The research team is made up of scientists from five different institutions. NPAC is made up of heads of institutions involved in the project. The CPC spends about 20% of his time on the project activities

and shares (delegates) responsibilities with the deputies. The NPAC is supposed to meet twice a year.

Project Sites

There are two benchmark sites, i.e., the Embu catena, running from the forested slopes of Mount Kenya downwards through the zones that are dominated by tea and coffee; and part of Taita Hills, which is a biodiversity “hot-spot".

Project Progress

The Outputs and Milestones Table shows the team lags behind in some fields, which in the view of the team is in line with the funds disbursed. According to the team, it took time to develop a true research partnership and conduct of the project activities moved much faster once this was achieved. However, the late release of project funds from the global office was considered contributory to late start. The team noted that progress of activities within the project was different depending upon availability of expertise and the type of work involved in methodologies to characterize the different organisms. It was considered that the outputs will be achieved by the end of the year.

Findings

1. There were mixed experiences with project coordination at country level. While the CPC devotes about 20% of his time to the project activities, he has two deputies, and finance and coordinating officers to help execute routine project administration requirements. But some team members identified weak leadership as a constraint to the project; the NPAC is not functioning as intended, meetings embracing all team members are irregular and internal communication is weak.
2. Institutional relationships have not been streamlined to allow time spent on this project considered part of the scientist's responsibility to the institute. Some scientists are using part of their leave in order to participate in the project in order to avoid being penalized by their employer institutions.
3. There were complaints from the research team on the financial management and administration services provided by the convening institution. Funds are requisitioned by the Finance officer at the request by the deputy Convener being a compilation from different research program leaders, and paid out as per requests. Several instances of delays were identified. The procurement process is so bureaucratic that up to the evaluation time, the project vehicle has not been secured.
4. The movement of the project funds within the research team was perceived as not being sufficiently transparent. Workplans were developed as a team but not financial allocations. There were reports of calling off project activities due to funds not being available to purchase inputs and tools. Greater transparency will reduce the perception of using funds for activities that were not agreed to in advance.
5. There is a discipline-personnel imbalance in the country team; the team is dominated by BNF scientists. Attempts are being made to train personnel in wanted disciplines but this is not at specialist level. There is a specific wont for an economist in the project team. The biometrician joined the team after implementation of activities. Scientific support from the Global Office is limited.

6. The BGBD project is wide in scope, involving different institutions and scientists both at Global and Country levels. It took long to form group cohesion and this contributed to delays in the implementation of the project. Action was then taken to implement methodological testing and BGBD inventorying concurrently rather than sequencing them. To a large extent, group cohesion was achieved as the research activities progressed.
7. Draft methodologies for characterisation were not agreed upon in time to allow timely testing and use in inventorying BGBD. Harmonisation of some of the methods is still an on-going process. As a consequence, progress in data collection proceeded at variable rates for different disciplines in the project, and issues like seasonal impacts on BGBD were not captured in the first tranche.
8. The research approach followed was that of research teams exposing the stakeholders to the project so that they eventually are involved in developing technology options together (participatory experimentation). This is important in realizing the goals of the project. However, first tranche outputs have limited impact and returns to farmers and care must be taken not to lose farmer interest. There is need for capacity building focused on developing and implementing interdisciplinary and integrated programmes for participatory methods and partnerships. Perhaps the team should receive on-site training in participatory research and priority setting to constitute an appropriate research agenda for the second tranche.
9. The project facilitated project scientists to participate in short term courses and workshops in areas of methodological deficiencies. However, this was implemented late and, with limited other scientific back-up, contributed to delays in project implementation.
10. Researchers noted their involvement with the BGBD project has positively impacted on the way they conduct research. They noted the increased degree of interdisciplinary and inter-institutional involvement and linkages with development actors. They now hope to address a wider range of problems faced by the stakeholders and become more responsive to farmer needs in the second tranche.

Identified Challenges

1. Effective communication has been weak. More than 50% of the participating scientists are not e-connected, yet this is essential for information management both at vertical and horizontal levels. Although the Kenyan team has the advantage that the Global Project Coordinator is based in Nairobi, there is limited global information exchange apart from that shared during annual meetings to which not every researcher is a participant.
2. The internal M&E needs improvement. Meetings to review progress based on the workplans and defined performance indicators have not been regular. The adhoc action plan and implementation schedules then appear to be dictates of the NPIC without consent or contribution from the team members.
3. Related to the above is the little integration between the biophysical and the socio-economic approaches to data collection. Biophysical activities have progressed ahead of the socio-economic activities. The project team needs to provide for integration in a manner that will distill useful information and identify research entry points from both biophysical and socio-economic characterization.

4. Co-financing to the project has been in kind. There is need to address co-financing especially for the purpose of capacity development at Masters and PhD levels in fields where expertise is limited. GEF funding does not cater for tuition for such training.
5. BGBD research has started generating successes in form of data and information. Some have already been documented in Journal format and there are plans for documenting more outputs. The challenge is not to make all document series have a technical and technology focus, so as to enable wider dissemination.

Overall Assessment

The Kenyan team appreciates the importance of the project at country, institutional and personal levels. There are institutional constraints that make working conditions for some of the scientists very difficult. There appears to be a need to have the institutional arrangements spelt out in some form of Memoranda in order to ease the frustrations of the researchers.

F. Mexico

MEXICO – Outputs and Milestones Tranche I
OUTCOME 1.
1.1 Standardized methods
M-1 done
M-2 done
O-1 F. Moreira CD, articles in process (end yr:03)
1.2 Indicators agreed and tested
M-1 After the analysis of the inventories (mid yr:04)
M-2 (end yr:04)
O-1 (mid yr:05)
1.3 Tools for economic valuation
M-1 done
M-2 mid yr :04
O-1 End yr: 04
OUTCOME 2.
2.1 Benchmark areas and sample areas mapped and documented
O-1 Almost done (90%)
O-2 done
2.2 Inventory of BGBD
M-1 done
M-2 done
M-3 Approx. 60% (mm: 06 yr:04)
O-1 Approx. 60% in national DB (mm: 12 yr:04)
2.3 Global Information Exchange Network
M-1 done
M-2
O-1

OUTCOME 3.
3.1 Demonstration sites selected
M-1
M-2
3.2 Farmer BGBD management practices
M-1
O-1
OUTCOME 4.
4.1 Policy obstacles identified
O-1 Initiated (mm: 12 yr:04)
O-2
4.2 Policy negotiations
M-1
O-2
OUTCOME 5.
5.1 Selective training courses
M-1 done
M-2 almost finished (mm: 12 yr:03)
5,2 Students selected
O-1 initiated
5.3 Awareness raising
O-1
O-2

Points raised during discussions with Country Team at AM-05:

- Acknowledged difficulties of Year 1. It involved coordinating six institutions with staff who are not full-time on the project; recruiting assistants that could accept low payments and students with no assured scholarships. Subcontracts were issued to the partner institutes. New expertise for the second tranche needed (e.g., agronomy)
- A lot of work is needed to meet the requirements of the BGBD activities, but with no matching funds. It requires dedicated and interested personnel who consider this as a challenge and an opportunity to advance career development.
- Communication is weak; only builds up toward the annual meeting. Transfer of funds from the Global Office slow and delays work.
- Lacking economic and biometrics personnel
- National Team meets only once to minimise expenses, but could have been better with more meetings. Management team meets when necessary to decide on activities and allocation of funds
- There was praise for the CPC
- There are differences in amount of work in certain BGBD disciplines which, as of necessity, delay others.
- **The Mexican team made an arduous effort to employ M&E Table 3, results of which are shown below.**

Table: Performance estimated by Mexican Country Team, using Table 3 of the M&E Plan

Project intervention strategy	**Key performance indicator**	**Progress**	**Products**
Development objective (Project Goal) Conservation and sustainable management of below-ground biodiversity is enhanced.	• By the end of the project, BGBD conservation practices identified, tested and implemented. • Capacity to manage and conserve BGBD improved	60% of the surveys have been translated for the data base and the calculation of the LUI GI Life museum educational activities with the Biosphere Reserve direction, divulgation of the BGBD inventories and school for farmers are planned	- Rural Participatory Diaggnostic RPD in the 3 windows - Surveys on Land Mgt history and Soil perception with Land Owners from the Sampling points -- Vermicomposting training in 1 window
Immediate Objective BGBD conserved and sustainably managed in globally significant forest ecosystems in seven tropical countries.	• Increased BGBD and improved ecosystem functions demonstrated in sites under improved management. • Alternative strategies for land management promoted and/or adopted by stakeholders across a range of scales from the farm to the nation. • Global methodology and database for BGBD developed and utilised.	- Use of standard methods with some slight modifications - 90% Sampling & 70% of BGBD studied or identified A Mexican DB is initiated, 60% of the BGBD data are captured.	Report of the methodologies used (CD Fatima Moreira) Report of the preliminary results from the specialist workshop (oct 2004) Pilot analysis of the inventory results will be presented in Manaus
Component 1 Internationally accepted standard methods for characterisation and evaluation of BGBD, including a set of indicators for BGBD loss.			
1.1. Select, standardize and test methods for characterising BGBD	• Methods for sampling and inventory of BGBD proven applicable in various ecological conditions • Methods for characterisation of BGBD at farm and landscape levels available and documented	- Methods agreed in the Mexican Team 90% Sampling BGBD done - Preparation of scientific articles	•
1.2 Key indicators for BGBD loss	• Methods for evaluation and indicators for BGBD loss are utilised internationally. • Importance of BGBD for different ecological	- inventories, gathering data from the different functional groups - A decomposition trial is settled in the	

	function established	3 sites - Explanatory variables being measured - LUIGI being designed	
1.3 Methods for evaluating economic benefits of BGBD	• Guidelines for economic valuation of BGBD and its functions agreed and accepted	15% Identification by the RPD of a need to value the water service which can be linked with soil structure and BGBD - Discussion of how to measure SSM and BGBD, list of parameters to measure Identification of an economist	•
Component 2a. Inventory and evaluation of BGBD in benchmark sites representing a range of globally significant ecosystems and land uses.			
2.1 Land use mapping of benchmark areas	• Digital database for each benchmark area established • Information on land use intensities available	- Soil description (100%) - Vegetation descript. (65%) - Sampling locations agreed and Georef. sampling points (95%) - LUIGI construction (70%) -The Mexican team is building a web page to interchange the information with the Mexican participants and to link with the BGBD website	•
2.2. Apply agreed methods for BGBD characterisation for full range of land use intensities	• Information of BGBD loss in relation to land use intensity available	- Inventory on 3 contrasting sites (LM, SF,VC) in Los Tuxtlas Biosphere Reserve in 4 land uses (tropical forest, agroforestry, pasture and maize). -60 % of the functional groups taxonomical list are made - mesofauna only sampling made	- Mexican data base designed and filled with BGBD data and explanatory variables (60%) • - Pilot analysis of these data made
2.3. Ecosystem health in Benchmark area in relation to BGBD evaluated	• Ecosystem health in relation to BGBD assessed in benchmark areas	-Need of a complete analysis of the inventory data to settle the indicators	•

Component 2b) A global information exchange network for BGBD.			
2.4. Information on BGBD in rel. to land use freely available	• Databases and information systems utilised by stakeholders and others nationally and internationally	-See 2.1 -As soon as we finish our data collection and have the link with the central DB we will transfer the data	- Mexican data base designed and filled with BGBD data and explanatory variables (60%) • Pilot analysis of these data made
Component 3 Sustainable and replicable management practices for BGBD conservation (identified and implemented in pilot demonstration sites in representative tropical landscapes in the seven countries).			
3.1 Information on management option made available from which to select management options	• Information on management options compiled and made available to each of the countries for selection • Selected management practices documented	80% of the Baseline determined- We probably do demonstration plots -on Lilies field (V. C) -on corn and mucuna mgt.(SF) - on Camaedora palm nurseries	See beginning of the table elaboration of DRP and surveys with the Land owners
3.2. Demonstration of successful management and conservation of BGBD	• Demonstration plots of practices for BGBD management and conservation established in benchmark sites in all participating countries • Increase in BGBD in demonstration plots	We have agreements with the stakeholders to sample in their field. - Up to now we don't have agreements for the experimental plots (in tranche 2 we will)	
3.3. Adoption of management techniques by farmers	• Sources of funding for demonstration sites assured. • Stakeholder adoption of management practices for CSM BGBD • Assessment of economic, social and environmental cost and benefits completed across scales for different stakeholders. • Commitment for long term conservation of demonstration sites	None; 2nd tranche	
Component 4 Recommendations of alternative land use practices and an advisory support system for policies that will enhance the conservation of BGBD.			
4.1 Policy evaluation and identification of obstacles for BGBD conservation.	• Country policy analysis reports at country level • Social, economic and cultural barriers identified at country level	- Meeting with Local and Regional authorities and stakeholders. -Strong relationship with the Biosphere reserve Administration and GEF/MIE project (SEMARNAT) - Familiarization with the National &	-meeting with the regional stakeholders (NGO, state authorities, agricultural schools from the region) • - Good equilibrium between science and RPR

	• Global analysis on general barriers to conserve and manage BGBG	RegionalPolicies (SAGARPA). - Identifiacation of some socio-cultural and political barriers	
4.2. Negotiate alternative strategies for BGBD conservation and sustainable land use	• Recommendations that support BGBD conservation are used by land-use policy decision makers in participating countries • National action plans for conservation and sustainable management of BGBD	-Presentation of the prject at some international events. (Succesful cases of suatainable Mgt, - Veracruz and Diversitas meeting in Oaxaca	• Presentation of the events in May and Nov 05
Component 5 **Improved capacity of all relevant institutions and stakeholders to implement conservation and management of BGBD in a sustainable and efficient manner.**			
5.1. Capacity enhanced in disciplines identified as lacking in cooperating countries	• BGBD research and management capacity institutionalized in scientific institutions in participating countries. • Capacity of farmers, extensionists and NGOs to interpret and apply information on BGBD improved	- Contacts with school farmers. - Networks with the regional NGOS - Talks and meetings with different stakeholders	- Biology course in CIATCali Sept 2003 (1 part.) - Termites Taxonomy, Manaus Aug. 04 (2 part.) - Earthworm Taxonomy, Nairobi, Nov 04 (1 part) - Vermicomposting course to the farmers SF (20 parti)
5.2 Enhanced awareness and knowledge of BGBD and its functions among stakeholders from farmers to national planners	• Knowledge of soil biota and its management disseminated to farmers, extensionists, NGOs and lower governments • Decision makers utilise soil biodiversity information in national and regional plans	See the beginning: Life Museum, etc…	• Posters presented and leaflets distributed

G. Uganda

UGANDA – Outputs and Milestones 1st Tranche

OUTCOME 1.

1.1 Standardized methods

M-1 Methods selected mainly from Swift and Bignell and adopted for use at a National Workshop in Macrh 2003.

M-2 Methods were tested during July –December 2003 for the different functional groups during July – December 2003, viz. BNF bacteria, earthworms, mycorrhizae, macrofauna (termites, ants and beetles), soil-borne pathogens and nematodes. These were refined at the Global Meeting in Embu in February 2004.

O-1 Refined methods documented but not yet published

1.2 Indicators agreed and tested

M-1 Community perception of indicators of BGBD loss identified and documented by December 2004. Physiochemical and biological indicators of BGBD loss are yet to be identified and agreed upon after completion of data analysis.

M-2 Indicators of BGBD loss not yet tested.

O-1 Validated indicators for BGBD not yet available

1.3 Tools for economic valuation

M-1 Economic valuation workshop attended in February 2003 in France

M-2 No tools have been tested in case study

O-1 No tools have been evaluated and documented

OUTCOME 2.

2.1 Benchmark areas and sample areas mapped and documented

O-1 Thematic Mapper Image interpreted and was not adequate for Land Use Mapping due to cloud cover. Aerial survey for digital mapping is planned for May 2005.

O-2 Geographical database containing data on soils land use was established in December 2003 and is continually updated.

2.2 Inventory of BGBD

M-1 Sampling frames were established in July 2004

M-2 Inventory of Mabira benchmark area with six windows is near completion.

M-3 Field data partially analysed and reported.

O-1 Data on inventory is being organised for entry into the National data base format provided by the global office. Transfer to global database is yet to be done.

2.3 Global Information Exchange Network

M-1 Network for information exchange is yet to be established

M-2 GIS database established since January, 2004. National Data base was designed by the global office and sent to countries. It is being implemented.

O-1 Database partially operational since January 2004.

OUTCOME 3.

3.1 Demonstration sites selected

M-1 Demonstration sites not yet selected but farmer participation secured by December 2004.

M-2 Farmer's management practices identified; alternative practices are yet to be

selected.

3.2 Farmer BGBD management practices

M-1 Tranche II milestone

O-1 Tranche II output

OUTCOME 4.

4.1 Policy obstacles identified

O-1 Tranche II output

O-2 Tranche II output

4.2 Policy negotiations

M-1 Tranche II milestone

O-2 Tranche II output

OUTCOME 5.

5.1 Selective training courses

M-1 Specialist in-country training activities in soil biology conducted (Mycorrhiza and Earthworms)

M-2 Specialist training activities in special techniques and methods: South-South – termites, ants, earthworms and nematodes in Kenya, earthworms in Nigeria, mycorrhiza in India and molecular techniques in Colombia. North-South -Economic evaluation in France.

5.2 Students selected

M-1

Students selected – 5 PhDs and 6 MSc

5.3 Awareness raising

O-1 Poster and leaflets being developed, 4 sensitisation workshops conducted.

O-2 Some policy documents have been assembled

Points raised during visit of Evaluator MB to Uganda:

Management & Implementation Structures

The Uganda Country Programme structure is composed of a CPC, a Technical Officer and an Administrative Assistant. Together with functional group leaders, they form the National Project Implementation Committee (NPIC). The research team is made up of scientists from five different institutions and several departments within these institutions. There is a physical office dedicated to the activities of the BGBD activities. The NPAC is made up of eminent scientists who are called upon to critique and give advice during seminar presentations on the progress of the project. The CPC devotes about 30% of time to the project.

Project site

Presently, the project is conducted on one site being in the benchmark area of the Lake Victoria Ecosystem commonly known as the Lake Victoria Crescent. It is an international water body shared between the three East African countries and is the source of River Nile which flows to the Mediterranean Sea. Within the Lake Victoria Ecosystem there area high tropical forests rich in biodiversity constituting biodiversity hot spots which are of global significance. The biodiversity in this benchmark area has come under severe

pressure from increasing and unsustainable land use practices. Agricultural production in the ecosystem has declined due, in part, to unsustainable land use practices leading to decline in soil fertility. Conservation of below-ground biodiversity through development of sustainable land use would result in increase in agricultural production hence national and global benefits.

Initially, three benchmark sites were selected within the benchmark area, namely Mabira Central Forest Reserve, South Busoga Central Forest Reserve and Gangu Forest Reserve, but later reduced to Mabira and South Busoga forest reserves. Following the Embu declaration that one benchmark site was mandatory (but countries may take on more if they had the capacity), Uganda decided to cover Mabira benchmark site for characterization (but with six windows) and upscale activities of the second tranche to South Busoga Central Forest Reserve. Even with one benchmark site, characterization is still continuing in the six windows.

Project Progress

The Outputs and Milestones Table indicates considerable progress in the development of methods and capacity to operationalise BGBD. Researchers pointed out some of the causes of delays to completion of the first tranche activities as being late release of project funds from the global office and the requirement to abide by the global guidelines that were not agreed at the beginning of the study period. The methodologies have not yet been fully agreed upon, and this has impacted on the inventorying process and establishment of the BGBD indicators. It is estimated that 70-75% of the first tranche activities have been completed, some of which are repeat measurements after re-defining the methodologies.

Findings

1. Team members had praise for the CPC and the Implementation Committee as having provided an enabling environment for the activities of BGBD. However, the country workplan did not have budgetary indicators which obscured transparency in the manner of expensing funds for the team members. Purchases are done by the Project Administrative Assistant and research funds are requisitioned from the technical officer who, apparently, allocates from budget lines defined in the global document.
2. The review team noted that many of the project team members are either technicians or aspiring graduate students. Some of the senior scientists are also beginner specialists in BGBD. The BGBD project should invest more in human capacity development (medium and long-term) for the team in Uganda at the risk of letting it lag behind in terms of project execution. Three areas of weakness were highlighted as being the most limiting: taxonomy, environmental economics and biometrics; others were indeed highlighted during the development of the project. There was expressed frustration by the unavailability of the "global experts" and limited support from the global Working Groups and Group Conveners. Mention was made of support and goodwill from specialist scientists not directly linked to the project. The review team recommends formalization of linkages with these scientists, perhaps as short term consultants.

3. The BGBD project is wide in scope, involving different institutions and scientists both at Global and Country levels. It took long to form group cohesion and this contributed to delays in the implementation of the project. Action was then taken to implement methodological testing and BGBD inventorying concurrently rather than sequencing them. To a large extent, group cohesion was achieved as the research activities progressed.
4. Draft methodologies for characterisation were not agreed upon in time to allow timely testing and use in inventorying BGBD. Harmonisation of some of the methods is still an on-going process. As a consequence, progress in data collection proceeded at variable rates for different disciplines in the project, and issues like seasonal impacts on BGBD were not captured in the firs tranche.
5. The research approach followed was that of research teams exposing the stakeholders to the project so that they eventually are involved in developing technology options together (participatory experimentation). This is important in realizing the goals of the project. However, first tranche outputs have limited impact and returns to farmers and care must be taken not to lose farmer interest. There is need for capacity building focused on developing and implementing interdisciplinary and integrated programmes for participatory methods and partnerships. Perhaps the team should receive on-site training in participatory research and priority setting to constitute an appropriate research agenda for the second tranche.
6. The project facilitated project scientists to participate in short term courses and workshops in areas of methodological deficiencies. However, this was implemented late and, with limited other scientific back-up, contributed to delays in project implementation. Scientists consider that short-term courses are not enough to turn participants into experts and there still is need for technical back-up or longer term specialised training. Feedback from trainers on quality of short-term training could be useful in guaranteeing confidence in data generated by the trainees.
7. Researchers noted their involvement with the BGBD project has positively impacted on the way they conduct research. They noted the increased degree of interdisciplinary and inter-institutional involvement and linkages with development actors. They now hope to address a wider range of problems faced by the stakeholders and become more responsive to farmer needs in the second tranche.
8. There have been advantages of having project scientists coming from institutions around Kampala which allows for short notice planning and consultative meetings to take place when needed. Prompt reporting to members on outcomes of the Global meetings has enabled quick adjustments to workplans and methods. The Project Office allows e-communication access and literature search for members who have no office e-facilities.

Identified Challenges

1. There is little integration between the biophysical and the socio-economic approaches to data collection. Biophysical activities have progressed ahead of the socio-economic activities. The project team needs to provide for integration in a manner that will distil useful information and identify research entry points from both biophysical and socio-economic characterization.

2. Co-financing to the project has been in kind. There is need to address complimentary funding from other institutions especially for the purpose of capacity development at Masters and PhD levels in fields where expertise is limited. GEF funding does not cater for tuition for such training.
3. BGBD research has started generating successes in form of data and information. The Ugandan team has not produced any publication relating to the project yet although papers have been drafted. The challenge is not to make all document series have a technical and technology focus, so as to enable wider dissemination.

Overall Assessment

Presently, there is a very good spirit within the site team, essential to success in carrying out BGBD activities in the field. The project team offered positive attributes to the project including the multidisciplinarity conduct of the research, increased interaction with local communities, introduction to the new science of BGBD, contribution to capacity development and offering prospects for professional advancement. It is the professional development in BGBD that needs most attention in the Uganda team. There is need for the Global Office to have an occasional presence in the country project activities.