IMPLEMENTATION COMPLETION MEMORANDUM (ICM)
Revised Template version 5/18/06

A. BASIC TRUST FUND INFORMATION

Most basic information should be automatically linked to SAP TF Master Data and IBTF

TF Name: *Dynamics of Biodiversity Loss and Permafrost Melt in Lake Hovsgol National Park, Mongolia*

TF Number:	TF028988
Task Team Leader Name:	Tony Whitten, EASRE
TF Amount:	US$804,100

Total financing of US $1,492,914 including $801,294 disbursed from the GEF grant and $691,620 co-financed from: universities and research institutions ($271,400); Government of Mongolia ($26,900); Trust for Mutual Understanding ($53,000); National Science Foundation ($75,000); companies and individuals ($15,320); and the Bank's Netherlands-Mongolia Trust Fund for Environmental Reform ($250,000).

Recipient of TF funds*:*	GeoEcology Institute, Mongolian Academy of Sciences
Type of TF:	GEF Child Fund
Single/Multi Donor:	Multi
Donor(s) Name(s):	Global Environment Facility (GEF)
TF Program Source Code:	GEFIA
Purpose of TF:	TA – Technical Assistance
TF Approval/IBTF Clearance Date:	June 21, 2001
TF Activation Date:	September, 2001
TF Closing Date(s):	October 31, 2006
Date of ICM Submission to TFO:	

Cost and Financing Table:

Goods:	$184,877.28
Services:	$454,887.53
Workshops:	$27,201.02
Incremental Operating Costs:	$134,328.17
Total disbursements:	$801,294.00

B. TRUST FUND DEVELOPMENT OBJECTIVES AND DESIGN

1. Original (and Revised) Trust Fund Development Objectives:

The development objectives remained largely unchanged throughout project implementation and were as follows:

- To identify the impacts of pasture use and forest cutting on the dynamics of forest, steppe, riparian zones and streams in the tributary valleys of the Lake Hovsgol National Park (LHNP).
- To define how those impacts interact and are affecting the melting of permafrost (and thus the release of carbon dioxide), soil characteristics, and plant and animal biodiversity.
- To make an inventory of climate change effects in LHNP.
- To determine sustainable resource use patterns that will also protect biodiversity, permafrost and soil sequestration of carbon.

- To calculate the costs and benefits of alternative land use practices, especially as related to pastoral nomads.

The only variation related to the depth of the study of forest cutting (see first objective) because there was very little cutting in the study area.

2. Original (and Revised) Trust Fund Activities/Components

Provide original activities/components to be financed by the Trust Fund. If original activities/components have been changed, identify them, and explain the nature of the revisions, their justification and approving authority.

Baseline Characterization and Monitoring :
The activities in this component aimed to document baseline environmental conditions in eight sub-watersheds, defining impacts of current patterns of grazing, forest cutting, permafrost, plant cover and aquatic resources. The eight sub-watersheds along the eastern shore of Lake Hovsgol form a gradient of livestock grazing, with heavy grazing in the north (closest to the town of Hanh) and in the southernmost watershed (closest to the town of Chandamon Under) with moderate to no grazing in the mid portion farthest from the local market communities. However, the poor condition of the roads meant that it was impossible to study and monitor conditions in such a broad area. Project design included the purchase of a boat to overcome this problem but following discussion with the TTL it was decided to study only the six northern watersheds, and the boat was not required. As a result the final project design included the study of conditions and monitoring of environmental parameters in six valleys exposed to a progressively severe range of livestock grazing; from low to no grazing in the southern two valleys, moderate grazing in the middle two valleys, and heavy grazing in the northern two valleys. Climate, permafrost, soil and plant conditions were studied, described and mapped across all valleys. The distribution of herders, grazing pastures for each herder family or group of herders, the number of livestock and their impact on vegetation were observed and mapped.
Measurement of Climate Change Impacts:
This component included activities to determine whether land-use practices and climate change have linear or synergistic interaction effects on permafrost and biodiversity. During project implementation, co-financing became available to bring the project data together into an ecosystem model to allow interactions and ecological impacts of climate change and human activities to be simulated.
Impact Mitigation Assessment: This component included the monitoring and evaluation of changes in areas with managed and unmanaged land-use practices and with fenced and unfenced steppe zones. It was originally planned to undertake an economic analysis of alternative land-use strategies; during project implementation the priority changed to focus instead on an economic analysis of alternative markets available to the nomads for their livestock products.
Workshops, Reporting and Dissemination: The component emphasized the production of clear and visually attractive publications for herders in the area, and the running of regional and local workshops on research findings.

3. Outcome Indicators

Provide original performance benchmarks to be measured in the assessment of outcome If none were established, explain why not.

Indicators were developed for the overall project objectives, and also for the implementation of the four project components.

Indicators for the achievement of project objectives:

- An objective assessment of land-use practices in the forests and adjacent steppe, and riparian zones produced.
- An evaluation of the interaction of the above biological and ecological impacts especially on ecosystem functions conducted.
- The climate change impacts on the rate and nature of permafrost melt defined.
- A better understanding of appropriate land use practices objectively defined to reduce grazing pressure on land cover, forest regeneration, and permafrost.
- An economic analysis of alternative land uses developed.

Indicators for project outputs by component:

Baseline Characterization and Evaluation

- Maps prepared of land cover, grazing areas, permafrost depth, tree growth, gers, number of livestock, and aquatic resources.
- Parameter changes monitored regularly in valleys with different land use practices.

Climate Change Impacts

- Interactions defined between climate changes and human activity impacts on land vegetation cover.

Impact Mitigation

- Mitigation effects on soil, permafrost, land cover plants, riparian zone, stream hydrology and chemistry evaluated.

Reporting and dissemination

- Production of an interesting range of written and visual materials based on research results.
- At least one workshop held per soum (district), and one regional (Eurasia) workshop.

It is recognized that these indicators, although considered sufficient at the time of project approval, are not ideal in that they are not specific, time-bound and measurable. Their utility is hence somewhat limited. An outcome indicator was not established specifically for capacity building; however, the contribution towards strengthening the community of young Mongolian scientists was an important achievement of the project (see below).

4. Other Significant Changes in Trust Fund Design

None

C. OUTCOME

1. Relevance of TF Objectives, Design and Implementation

Discuss how the Trust Fund objectives, design and implementation are proved relevant to current global/regional/country priorities and the Bank's sector strategy

Climate change threatens economies all over the world, particularly those of developing countries because of their high dependence on the exploitation of natural ecosystems. The working hypothesis of the project (borne out by research results) has been that over-grazing and climate warming in the region are combining to cause an accelerating rate of drying of the soil which will lead to lower productivity in the steppe, thus threatening the livelihoods of nomadic pastoralists and changing the already fragile environment.

The objectives of this 'targeted research' project were to define the causes of change and to identify mitigation steps that would reduce the combined impacts of livestock grazing and climate warming. The project comprised a study of combined impacts of climate warming and nomadic pastoralism on watershed ecosystems, including steppe, forest and stream ecosystems in the Hovsgol region of northern Mongolia. Appropriate to GEF OP#12, an integrated ecosystem and watershed approach was used in the studies. The LHNP is Mongolia's first International Long-Term Ecological Research (ILTER) site, established by the government as part of a research network with the mandate to study environmental problems that affect stressed natural and economically important ecosystems and to recommend solutions to mitigate impacts and to encourage sustainability of resources. This targeted research project has been one of the first programs to address this mandate and thus has added value to ongoing work in Mongolia and has provided experience to feed into future work in the area. The empirical data obtained under this project and the recommendations produced (e.g. *Herder Handbook*, see below) is of major relevance to government agencies and those working in the field of sustainable development and will assist in the design of strategies for adaptation.

The project was designed to respond to the Mongolian National Environmental Action Plan 2000 which identified as major environmental issues both the role of melting permafrost in generating carbon dioxide and the need to control deforestation and forest degradation especially in relation to the management of protected areas and buffer zones, such as through the effects of grazing and fire. The conducting of goal-oriented research in priority areas was specifically mentioned in both regards. The project's overall design was in line with the Government of Mongolia Action Program (2004-2008) for attaining environmentally sustainable development. The project also related to the Millennium Development Goal 7 on environmental sustainability. The Government of Mongolia also has joined international conventions, such as the Convention on Combating Drought and Desertification, and the project contributed to meeting its responsibilities in this area.

The Bank is Mongolia's lead partner on environment and natural resource management issues. The Country Assistance Strategy current at the time of project design (CAS 17604-MOG, June 2, 1998) stated that the Bank would assist the government's poverty reduction efforts through support for initiatives to promote sustainable land and resource use emphasizing the participation of stakeholders. The project is also consistent with the second focal area of the current CAS 2004-2007 (Reducing rural and urban vulnerabilities by piloting mechanisms to reduce rural risk and enhancing private-sector-led growth in rural areas; strengthening environmental management through expenditure reforms, increasing participation in community-based resource management; improving the coverage and financial sustainability of services – especially water – for peri-urban residents; and improving the viability and complementarity of rural and regional development initiatives.).

Climate change and sustainable land management are key concerns for the Bank; climate change was identified as one of the key foci of the new Sustainable Development Department. The impacts of climate change will affect the livelihoods of millions of herder families in Mongolia and beyond; nomadic pastoralism as a way of life in the mountainous regions of Asia extends across Mongolia, northwest China, Tibet, Kazakhstan, Tuva, and westward across the Russian steppe. Although this research project focused on the Lake Hovsgol watershed, this region and the impacts studied are representative of many boreal regions of north-central Asia.

2. Achievement of TF Development Objectives

Discuss and rate the extent to which the Trust Fund development objectives have been met, with linkage to outcome indicators. This includes an assessment as to whether the actual output/deliverables were successfully completed, compared to the expected output, for each activity/component of the Trust Fund. For activities where the output is a report or a dissemination event such as a workshop, conference, training, or study tour, discuss and rate the Quality, Presentation and Dissemination. Applicable reports and/or documents are to be attached to the ICM.

The Development Objectives were as follows:

To identify the impacts of pasture use and forest cutting on the dynamics of forest, steppe, riparian zones, and streams in tributary valleys of Lake Hovsgol National Park (LHNP).
Many different researchers worked on this aspect and the outcome was satisfactory overall. As mentioned above, forest cutting was found not to be an issue in the study area.

To define how those impacts interact and are affecting the melting of permafrost (and thus release of carbon dioxide), soil characteristics, and plant and animal biodiversity.
As above, many different researchers worked on this aspect and the outcome was highly satisfactory overall. In addition to several short papers published in Mongolia and international talks at conferences, two major papers detailing permafrost distribution were published in an important international peer-reviewed scientific journal (Permafrost and Periglacial Processes), and a third paper has been submitted and is under review. The project research has been integrated effectively into the research on permafrost thaw world wide. The borehole data are now part of the Circumpolar Active Layer Monitoring (CALM).

To make an inventory of climate change effects in LHNP.
This work was satisfactory and resulted in a paper in an international peer-reviewed journal. (See B. Nandintsetseg et al. 2007. Trends in extreme daily precipitation and temperature near Lake Hovsgol, Mongolia. *Int. J. Climatol.* 27: 341–347 (2007), attached.)

To determine sustainable resource use patterns that will also protect biodiversity, permafrost and soil sequestration of carbon.
This work was satisfactory; the project organized an international workshop in May, 2006 on nomadic pastoralism and climate change that was well attended and reported in the news media in Ulaanbaatar. A summary with abstracts of talks presented at this workshop is on the project's web site. This work led to the publication of the Herders' Handbook which has been widely disseminated and is available at sub-branches of the most widely distributed bank in Mongolia as well as on the website www.hovsgolecology.org.

To calculate the costs and benefits of alternative land use practices, especially as related to pastoral nomads.
This work was altered, and an investigation of alternative products and markets for pastoral nomads was undertaken rather than alternative land use practices – see explanation below. The research undertaken was satisfactory.

Component 1 - Baseline Characterization and Monitoring

Objective a. An objective assessment of land use practices in the forests and adjacent steppe, and riparian zones.

This assessment of land-use practices was accomplished in detail for each of the six valleys with a focus on the lower valleys near the lake that are heavily grazed (the data and conclusions for these assessments were extensively documented in the project's annual reports for 2002-2005). Component outputs were successfully achieved; all maps (land cover, grazing areas, active layer depths and a permafrost model, tree age distribution, locations of herder seasonal camps, grazing intensity, and the aquatic resources, including fish taxa, aquatic insects, and diatom taxa distributions) were prepared within the project's Geographic Information Systems (GIS) and are available on request. Most of these maps were included within the project's Annual Reports. All appropriate soil types and characteristics, plant taxa and distribution of biomass, animal distributions were monitored each year during the summer three months except in 2006 when heavy rains flooded all valleys and the staff had to abandon the valley camps for safety reasons.

Objective b. An evaluation of the interaction of the above biological and ecological impacts especially on ecosystem functions conducted.
Detailed studies were made of the six valleys to compare the impacts in areas where there was extensive grazing with areas where few livestock were grazed. The research revealed that the impacts of climate warming on grazing steppe areas and forested areas are increasingly similar to the impacts from nomadic pastoralism; the loss of vegetation cover from pastoralism results in warming of the soil and loss of soil moisture, as does climate warming. Soil moisture is the limiting factor for plant growth in this semi-arid region, and drier soils also lead to a more rapid thaw of permafrost. The studies did not allow the researchers to conclude with certainty whether the impacts from pastoralism and climate warming are additive or synergistic. Further details are to be found in the Annual Reports and emerging papers.

Component 2 - Climate Change Impacts
Objective c. Climate change impacts on the rate and nature of permafrost melt defined.
Study site data collected by the project indicated a similar degree of climate warming as recorded at the Hatgal Meteorological Station, where an almost 2°C increase in average annual temperature has been recorded during the last 43 years. The project conducted extensive research on the rate and nature of permafrost melt using field data, modeling techniques and the results of long-term monitoring of temperatures of permafrost and active layer depths in 15 boreholes drilled at several locations in the valleys. The empirical model was applied to develop a permafrost distribution map which estimated permafrost distribution throughout the Hovsgol area. The project determined through research that the active-layer thickness of the permafrost in the Hovsgol region varied in association with livestock grazing pressure. Data obtained from surface ground data-loggers shows that different plant covers have different insulatory values; removal of vegetation cover increases mean summer surface and ground temperatures, accelerating the rate of permafrost melt. Thus, the key to preserving permafrost and ecosystems, especially in the Hovsgol taiga zone in the presence of climate warming, must be based on the protection of appropriate vegetation cover.

Component 3 - Impact Mitigation:
Objective d. A better understanding of appropriate land use practices objectively defined to reduce grazing pressure on land cover, forest regeneration, and permafrost.
The project concluded that climate change impacts on the steppe and forests are very similar to those caused by nomadic pastoralism and forest cutting. Herders need to be much more sensitive to what is happening in their surrounding environments and must be prepared for, and begin to adapt to, the changes although conditions in the areas are already harsh; the project coined the term 'The Cornered People' to describe the plight of the herders in the study area. Conclusions regarding land use practices have been summarized in the recently published Herders' Handbook (English version on www.hovsgolecology.org). This includes recommendations for more frequent

movements by herders. The findings were also discussed at the well-attended international conference (May 2006) and the final project workshop (September 2006), and were disseminated through progress reports.

Objective e. An economic analysis of alternative land uses developed.
The economic analysis of alternative land-use practices was not conducted because it was determined during project implementation that the priority should be placed on an economic analysis of the alternative markets available to the nomads for their livestock products. The costs of alternative land-use practices would have been difficult to calculate because the primary conclusion of the project with respect to protection of the environment in the context of the climate warming is that herds in this region should be moved more frequently. MBA students from the Wharton School of Business Administration of the University of Pennsylvania were invited to work with the project's social science researcher to develop alternative costs for products, assuming herders could sell products in different markets (see 2005 Annual Report for details). In theory, their best market would be to take products across the Russian border for sale north of Hanh. Unfortunately, this is not possible because the border is currently closed to exports. A report on this situation was delivered to the officer of the environmental subdivision of parliament, and *power point* presentations were made to the soum government and officials in Hatgal soum to raise awareness of the problem that herders are facing. The study concluded that the only feasible market at present, given the existing political climate between Russia and Mongolia, is for the herders to continue doing what they are doing.

Component 4 - <u>Reporting and dissemination</u>
Objective e: Production of an interesting range of written and visual materials based on research results.
An Eastern Shore Hovsgol newspaper was published each year of the project and disseminated throughout the Hovsgol watershed. Two videos were developed on the project and shown a number of times on Mongolian television. Posters of the research were prepared and given to herders as well as being displayed in the Turag Visitor Center for the Sub-District. Materials and project information have been made available through the website www.hovsgolecology.org. The researchers and the international consultant are publishing papers on the results of the studies of the Hovsgol GEF project, many of them in international peer-reviewed journals.

Objective f: At least one workshop held per soum (district), and one regional (Eurasia) workshop
The project was associated with two soums – Hanh in the north and Hatgal in the south. One workshop was held in the former and two in the latter on a range of subjects, and they were well attended by public officials and approximately 50 local residents. The researchers and the International Consultant made presentations to the small Turag NGO herder group whose establishment was facilitated by the project, and gave talks at the Hovsgol National Park Conference in 2006 representing 20 years since the founding of the park. This was attended by a number of National Park Staff, plus two individuals from the Ministry of Nature and the Environment and 50 local residents. Display booths were also set up at the Nadaam festival celebrations in Hatgal, and the researchers answered questions from local citizens during the festival. Each of the researchers was also interviewed on Mongolian national television about their research.

Several workshops were presented and Open Houses were hosted in Ulaanbaatar for the academic community and for the press corps. A major regional workshop on Nomadic Pastoralism and Climate Change was held in May, 2006 to which GEF Operational Focal Points for north-central Asia were invited (the OFP for China attended). These workshops were highly successful in

terms of participation, engagement of other academics, dissemination of knowledge and press coverage.

3. Efficiency

Describe the degree to which the Trust Fund activities have been efficiently implemented, in terms of their associated costs, implementation times and economic and financial returns.

Considering its achievements, project implementation was cost-effective and most of the TF activities were carried out within budget. The project was successful at leveraging co-financing funds and in-kind contributions, notably from the institutions of the international researchers involved with the project, many of which covered staff time, loaned equipment and hosted the Mongolian researchers during international learning exchanges, providing numerous invitations to join trips and meetings. The Mid-Term Review identified that the Mongolian researchers should be given opportunities to travel to their international supervisors for these learning exchanges; the costs were met through co-financing from the Bank's Netherlands-Mongolia Trust for Environmental Reform that also covered the costs of a workshop on ecosystem modeling, which brought all the empirical research data of the project together into one integrated system.

A delay in project start-up was caused by problems in the transfer of GEF funds to the project bank account, and hence project activities were begun in early 2002 rather than in late 2001. The project was designed as a five-year monitoring and experimental study of watershed conditions, which, in this cold mountainous region, could largely be accomplished only during the summer months. Therefore, it was not possible to hire and develop the field research crew for 2001, and researchers were instead hired and trained from April 2002, beginning field study in June, 2002. Equipment was purchased during the first months of 2002. For this reason, project closing was extended to 2006 to meet the original design of five field seasons.

4. Development Impacts, including those that are Unintended/Unrelated to TF Objectives

Discuss all other outcomes and impacts achieved under the Trust Fund (including unintended, positive and negative). Where relevant, discuss how the Trust Fund has contributed to the development/strengthening of relevant institutions, mobilization of other resources, knowledge exchange, recipient policy/program implementation, replicable best practices, introduction of new products, New Forms of Cooperation with Other Development Institutions/NGOs, etc., which would not have been achieved in the absence of the Trust Fund.

An outcome indicator was not established specifically for capacity building. However, the project is one of only two Bank-implemented 'targeted research' GEF projects and the STAP encouraged the project to do as much as possible to build capacity. Twenty-three young Mongolian graduates were hired and trained in specific scientific areas for monitoring environmental change and mitigation. Three researchers dropped out of the program after the first year. Specific scientific training included augmenting their earlier training in climate change, plant ecology, carbon budgets, forest insect assessment, forest regeneration processes, forest tree growth and age-structure analyses, soil characterization, bird, small and large mammal population assessments, water quality analysis, algae diversity, aquatic insect and fish population analyses, and socio-economic and marketing analyses and marketing. The integration of the results into an Ecosystem

Model at an extended workshop was facilitated by visiting international scientists and a Mongolian doctoral student from the University of Pennsylvania. This workshop was possible through additional funding from the Trust for Mutual Understanding, NY, and the Bank-executed Netherlands-Mongolia Trust Fund for Environmental Reform which also supported the project researchers to visit the laboratories and field study sites of the above and other international scientists. These exchange opportunities have encouraged collaborative research and co-publication of the findings of the targeted research. Many of these collaborations are continuing largely because of the efforts of the researchers to excel in their respective scientific fields.

The project offered the opportunity to several of the researchers to take leading roles in organizing field activities, scheduling and logistics. The researchers responded extremely well to this opportunity. After the first year of the project, the Project Manager resigned for personal reasons and the position was filled by one of the existing research staff. The individual elevated to this position responded very effectively, demonstrating how effectively the capacity building had been early in the project, and remained Project Manager to the end of the Project.

The project's final report concluded that for 15 of the researchers the training and the research of the project was highly beneficial; for the remaining eight individuals, the project had only a limited impact because of a lack of motivation on the individual's part, a lack of ability, or the inability of the International Consultant or others to provide the type of help needed. Mongolian and International mentors (senior scientists) were used throughout the five years of the project, and their participation was very important to the capacity building efforts. Nonetheless, some individuals simply did not "catch fire" and progress as young scientists. Three of the researchers were identified as being weak early on in project implementation and it was considered necessary to replace them. However, the Project Director of the Institute of GeoEcology would not permit this. These researchers remained poor researchers, and their performance had a notable negative impact on the research overall.

The establishment of a Turag Herder NGO was facilitated by the social science researcher, and for the first time this group of nomads found benefits from working and acting as a group. They were the focus of the work of one student in 2005 and two in 2006 from the Wharton Business School who helped determine ways to improve their markets. This NGO was active during the course of the project, but realistically it is unlikely to be sustainable after project closing because of the lack of capacity and organizational skills of the members.

Unfortunately, because of (a) entrenched ideas and habits among some of the senior academics in the country, (b) the commonly uncritical ways of teaching and working with young scientists in Mongolia, and (c) the 'threat' perceived by older academics from the well-trained project researchers, it is possible that the capacity building may not show as a broad gain for Mongolian science in the short term but should prove to be very effective in improving science standards in Mongolia over the medium and long term. The Institute of GeoEcology had promised to hire as many as ten of the project researchers at the end of the project, but this did not materialize.

5. Overall TF Outcome

Justification for overall outcome rating, taking into account the Trust Fund's relevance, achievement of each TF development objectives, efficiency and development impact. (Rating Scale would be consistent with the six point scale used in ISR/ICR: Highly Satisfactory (HS), Satisfactory (S), Moderately Satisfactory (MS), Moderately Unsatisfactory (MU), Unsatisfactory (U) and Highly Unsatisfactory (HU))

The overall outcome of the project is Satisfactory. The justification for this rating is that some two-thirds of the researchers diligently, in difficult conditions, conducted good relevant science, mastered bio-statistical techniques and modeling skills, learned English, took advantage of travel and mentoring opportunities, communicated the findings, and developed writing skills.
Inevitably, not all of the young researchers excelled, with some failing to develop well or to take advantage of the opportunities the project opened up for them.

D. Risk to Development Outcome

1. Follow-On Results and/or Investment Activities

Identify and provide a description of the role played by this TF that led to those follow-up activities or investments checked below. (Check all that are applicable):

Not applicable

2. Replicability

Describe and rate the extent to which the Trust Fund has generated useful lessons and methodology that are replicable in other sectors and/or regions.

This project is one of only two GEF 'targeted research' projects implemented by the Bank. The capacity building aspect of the project worked very well and is replicable, demonstrating that: (a) it is possible to draw on scientists from more developed countries and top scientists in the home country to help train young scientists from developing countries, and (b) these efforts can result in considerable co-financing and good will. The research results will contribute substantially to the overall understanding of the impacts of climate change on the environment of central/NE Asia.

3. Overall Risk to Development Outcome

Rate how likely, and for how long, the outcomes will be sustained after completion of Trust Fund activities, and the likelihood that some changes may occur that are detrimental to the achievement of the TF development objectives. These may include factors such as technical, financial, economic, social, political, environmental, government ownership/commitment, other stakeholder ownership, institutional support, governance and natural disasters exposure. (Rating Scale would be consistent with the four point scale used in ISR/ICR: Negligible to Low (L), Moderate (M), Significant (S) and High (H))

The overall rating for "how likely, and for how long, the outcomes will be sustained" is judged to be Significant. However, it should be recognized that site- and activity- sustainability were not intended as outcomes. Even so, the permafrost data will continue to be collected by the senior Mongolian permafrost scientist and his staff until the equipment fails; some researchers will continue their work in the valleys as part of postgraduate degrees; and the Director of the GeoEcology Institute will continue the work as a high priority for funds as and when they may become available.

There is a Significant or High likelihood that the impact of all the capacity building will be sustained. The researchers of the Hovsgol GEF project are developing scientific papers for

publication, many of which will be published in international scientific journals. Several papers will also be published internally in Mongolia and postgraduate degrees obtained.

In addition, over 5000 copies of the Herder Handbook have been printed (funded by the Trust for Mutual Understanding) and will be distributed. Research now in the proposal stage, if funded, will follow up with questionnaires to determine the usefulness of the Handbook and seek suggestions for improvements from the herders themselves.

It is hoped that a third Ecosystem Modeling Workshop can be funded and organized later in 2007 in order to finalize and test the model and its broader application. If this is possible, the final model will be disseminated to government officials with the hope of encouraging new policies to protect pasture and forested areas of Mongolia.

E. PERFORMANCE

1. Bank

Rate and justify rating on how well the Bank carried out its specific responsibilities assumed under the Trust Fund. If the TF financed Secretariat functions, describe how well the Secretariat carried out its roles and responsibilities, and its exit strategy, if any. If the Bank is executing Recipient work on behalf of Recipient, describe how well the rationale for Bank execution (as specified in the IBTF) was realized. (Rating Scale would be consistent with the six point scale used in ISR/ICR: Highly Satisfactory (HS), Satisfactory (S), Moderately Satisfactory (MS), Moderately Unsatisfactory (MU), Unsatisfactory (U) and Highly Unsatisfactory (HU))

Bank performance is rated as Satisfactory. Support provided throughout the five-year project duration was critical to the success of this complex project. Advice was available from Bank staff on both scientific and financial aspects, and problems arising during project implementation were carefully discussed and corrections offered.

2. Recipient (for Recipient-executed TFs only)

Rate and justify rating on how well the different tasks that were expected from the Recipient under this Trust Fund were carried out. (Rating Scale would be consistent with the six point scale used in ISR/ICR: Highly Satisfactory (HS), Satisfactory (S), Moderately Satisfactory (MS), Moderately Unsatisfactory (MU), Unsatisfactory (U) and Highly Unsatisfactory (HU))

Counterpart: Government of Mongolia

Provision of counterpart funding: MU – Despite the efforts of the Executing Agency(even with requests from the Vice President of the Mongolian Academy of Sciences), it proved very difficult to acquire the agreed counterpart co-financing.
Provision of office and research space: S – The Institute of GeoEcology provided a good suite of four rooms large enough for the researchers, computers and equipment.
Grant processing: MS – It took a long time to get the financial management and procurement processes working well – for example, many of the withdrawal requests had to be returned for various reasons. There was considerable improvement through the project but mistakes were still being made up to the end despite the engagement of the local Bank staff.
Steering committee: MU – The Steering Committee never really functioned effectively. The project held 'open houses' but attendance by Steering Committee members was poor.

Particularly disappointing was the lack of engagement from the (then) senior management in the Ministry of Nature and Environment.

F. LESSONS LEARNED / RECOMMENDATIONS

Describe the most significant positive and negative lessons learned from the success or failure of the grant activity and, as appropriate, make constructive recommendations for each stakeholder involved (Donor/Bank/Recipient/Development Community)—based on the assumption these stakeholders might decide to undertake a similar activity at a future time.

Although this kind of research would ideally be done over at least ten years of continuous effort, it has been successful albeit somewhat constrained. A key element was the quality of the International Consultant hired who was wholly committed to the project and its aims and likely used more than the time allotted to find and make connections with potential mentors and to raise significant sums of co-financing both as cash and in kind (equipment, books, volunteers and foreign students). The outcomes would likely have been very different without all the value-added provided.

Mongolian science is limited by a hierarchy of older scientists who dominate younger scientists and want to control, and too often limit, the growth of young scientists. Problems did exist between senior scientists of the Mongolian Academy of Sciences and the project's objectives for capacity building. In an environment where funds for research are extremely limited, conflicts over the control and use of funds will readily develop and did, though they were limited overall due to the help from the administration of the Mongolian Academy of Sciences. This may limit the success of some of the young individuals trained in the Hovsgol GEF Project within some institutions; but the scientific community as a whole has been and should continue to be supportive of the young researchers. A critical mass of bright young scientists is now beginning to form in Mongolia's universities. This project contributed to this critical mass and in that respect, the project was indeed "Highly Satisfactory" for the future of Mongolia. Emphasis should continue to be placed upon capacity building in Mongolia.

The success of this targeted research project has resulted from the involvement of distinguished international scientists who are interested in working in Mongolia and want to help train young people. In general, targeted research in a developing country, where science is not necessarily high level, can best be promoted if projects have a strong capacity building component. This was the advice of the STAP, and has been a central tenet throughout the project. The project benefited from the idealism of young scientists who wanted to protect the environment, to help their country and to learn.

G. ICM PROCESSING AND COMMENTS

1. Preparation

TTL at Approval: Anthony J. Whitten

TTL at Closing: Anthony J. Whitten

Comment of TTL at Closing: The project overall is judged to have been Satisfactory having conducted good, solid science and helped develop over five years a cadre of some of the best-trained young scientists in the country. The International Consultant was key to the success of the project and gave far more to the project than would be reflected simply by the fees paid. His

commitment both to the development of the site and to the future of Mongolian science, were exceptional. The Government of Mongolia recognized this at the final workshop by awarding a special medal of cooperation. It is disappointing that some of the young scientists did not take advantage of the project opportunities as they should but capacity-building projects rarely achieve 100% success among all individuals. The research findings are already finding their way into the international literature, contribute to the understanding of climate change which is even more important now than it was seven years ago when the preparation started.
Prepared by (if other than TTL):
Date Submitted to Approving Manager: April 27, 2007

2. Approval
Manager: Rahul Raturi
Date Approved by Manager: May 16, 2007
Manager's Comment:

3. TFO Evaluation of ICM Quality
TFO Reviewer:
TFO Rating on the Quality of ICM *(Satisfactory or Unsatisfactory):*
Comment and Justification for Rating Given by TFO: