GFR 8247 - KCPII - Mobilizing Spatial Economics and Information for Tiger Habitat Conservation

Team Leader: 00000074032 - Mr Michael A. Toman

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This GFR includes the following sections: Basic Data Info, Basic Data - TTL Comment, Description, Project Information, Program Specific, Confirmation.
Comments/Requests by TTL

DESCRIPTION

1. What is the Development Objective (or main objective) of this Grant?

As the wild tiger population plummets, the global community is mobilizing through the Save the Tiger program to conserve the tiger’s remaining habitat. Using a new source of near-real-time forest monitoring information, the research carried out through this grant will support implementation of cost-effective strategies by testing the effectiveness of alternative approaches to habitat conservation in Asian tropical forest countries, in order to guide the allocation of program resources.

2. Summary description of Grant financed activities

To support cost-effective resource allocation, the research project will develop two complementary resources:

(1) A continually-updated high-resolution database for tracking the status of remaining forest habitats for tigers in 12 Asian countries (Bangladesh, Bhutan, Cambodia, China, India, Indonesia, Lao PDR, Malaysia, Myanmar, Nepal, Thailand and Vietnam).

(2) Econometric modeling that will identify critical drivers of forest habitat destruction and protection costs in different areas. The econometrics will be based on a consistent methodology that uses information on habitat conditions, local extinction risks, habitat protection costs and determinants of forest clearing to guide cost-effective allocation of resources for habitat protection. The methodology can be used to support rapid redeployment of resources as the regional pattern of threats and opportunities shifts over time. The project will develop a complete prototype application of the methodology for all tiger habitat areas in the 12 Asian countries. The project will actively disseminate research findings, databases, tools and prototype results to the interested policy research community and critical stakeholders in the Save the Tiger program, including World Bank staff, participating governments, and key NGOs.

3. (Optional question) What can/has been done to find an alternative source of financing, i.e. instead of a Bank administered Grant?

4. What are the main risks related to the Grant financed activity? Are there any potential conflicts of interest for the Bank? How will these risks/conflicts be monitored and managed?

The proposed project carries negligible risk for the Bank. In fact, it may significantly reduce the risk associated with the Bank’s lead role in the Save the Tiger program by promoting cost-effective use of the scarce resources available for habitat protection. The program will also promote transparency and credibility by relying entirely on publicly-available data and publishing all results.

There are no apparent conflicts of interest for the Bank, because it is playing a lead role in conservation of the tiger’s remaining habitat. The project’s approach to resource allocation is also aligned with the Bank’s emphasis on cost-effective programs for natural resource and biodiversity conservation.

KCPII

1. What is the general issue that the project addresses and what is its innovative value? Why is it of interest to the Bank?

Operating under tight budget constraints, the Save the Tiger program will confront several complicating factors, including the need to conserve specific habitats large enough to accommodate this keystone predator; differential threats to important regional subspecies that must be preserved (Bengal, South China, Indochinese, Malayan and
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Sumatran tigers); divided national jurisdictions; differences in countries’ institutional capabilities, conservation management costs, and willingness to pay for conservation; and, not least, widely-differing and rapidly-changing opportunities for commercial exploitation of remaining habitat areas.

Cost-effective resource allocation under these dynamic conditions involves ongoing reassessment of threats and opportunities in many habitat areas scattered across the 12 project countries. Timely analysis requires near-real-time forest monitoring information that has previously been unavailable in the pan-tropics outside of Brazil. Such information has just become available for the whole of tropical Asia, providing the opportunity for a new and innovative approach to analysis of threats and opportunities for habitat protection. The project is of interest to the Bank because it will provide an entirely new and potentially-powerful vehicle for incorporating cost-effectiveness principles into the Save the Tiger program.

Timely forest monitoring information for Asian tropical countries is now available from FORMA (Forest Monitoring for Action), a new database developed by a research consortium that includes the Center for Global Development (http://www.cgdev.org/forma), the University of Maryland, the World Resources Institute and Resources for the Future, in consultation with World Bank staff, Conservation International, the Nature Conservancy and WWF. Drawing on data from NASA’s MODIS system, FORMA provides monthly updates on forest clearing at high spatial resolution for all tropical Asian countries with tiger habitat. A technical description of FORMA is available in Hammer, et al. (2009). The proposed project will overlay spatial information from FORMA with high-resolution tiger habitat maps maintained by a consortium that includes the Wildlife Conservation Society, World Wildlife Fund, Smithsonian Institution and Save the Tiger Fund (http://www.tigermaps.org), and maps from the World Database of Protected Areas (http://www.wdpa.org) of the United Nations Environment Program and the International Union for Conservation of Nature.

2. Describe its development impact. Who will benefit and to what extent?

Empirical research has repeatedly shown that habitat conservation is primarily a development problem, because habitats in poor regions are very costly to protect without the active support of neighboring communities. Cost-effective protection therefore involves providing incentives for these communities to forego commercial opportunities in protected areas (Chomitz, et al. 2006; Kaimowitz and Angelsen, 1998). By using an explicit, empirically-based cost-effectiveness approach, the proposed project will help direct resource flows to communities that confront the highest commercial opportunity costs. This approach will be credible and sustainable, because it will relate directly and transparently to the conservation objective, and because it will be incentive-compatible for both donors and local communities.

3. What is the potential for replicability (including cross-country applicability)?

The project will provide a research approach, database construction protocol and resource allocation methodology that can be applied to many other species conservation problems, in both tropical Asia and other tropical regions. It will easily link to many open-access GIS databases maintained by organizations such as IUCN to track changes in species’ habitats. The project therefore has high potential for replicability across countries and regions in the pan-tropics. Examples of potential replications include programs to reduce habitat loss for wild Asian elephants, large forest cats in Africa, and great apes in equatorial Africa and southeast Asia.

4. Give indications of country participation and ownership.

All of the beneficiary countries identified by this proposal have recently demonstrated strong commitment to preserving tiger habitat. In November, 2010, heads of state and high-level representatives from all 12 countries attended the world’s first tiger summit, convened in Moscow by the presidents of Russia and the World Bank. All participating countries endorsed the Global Tiger Recovery Program, whose objective is doubling the number of tigers by 2022 by developing conservation programs and cooperating across national boundaries to stop poaching and illegal trade in tiger parts. The participating countries’ interest in tiger habitat conservation has undoubtedly been enhanced by their broader interest in compensation for tropical forest conservation. The tiger is a keystone predator that requires large habitats in tropical forest regions. These same regions are the primary focus of programs proposed under REDD+.
(Reduced Emissions from Forest Destruction and Degradation). Pilot projects are being undertaken by the Forest Carbon Partnership Facility, the government of Norway (in collaboration with the governments of Guyana and Indonesia), and other organizations. Preparations for participation in REDD+ are being made by public and private stakeholders in many Asian tropical forest countries, including Nepal, Cambodia, Vietnam, Lao PDR, Thailand and Indonesia (references hyperlinked). All six countries are also participants in the Save the Tiger program, so the proposed project provides a natural vehicle for pilot implementation of a cost-effective approach to forest conservation. Successful commitment to cost-effective tiger habitat protection will increase participating countries’ appeal to potential REDD+ donors, so the prospects are excellent for widespread adoption of the methods developed by this project. We will enhance these prospects by actively disseminating information about the project to potential REDD+ donors.

5. Summarize consultations within and outside the Bank (including with the recipient country) in the preparation of this proposal.

The proposed project team has engaged with stakeholders on related issues for over a decade. The associated Bank staff and consultants have played lead roles in the development of FORMA (Forest Monitoring for Action), the forest monitoring database that will be critical for implementing the program. FORMA’s first application in tropical Asia, in Indonesia, has been undertaken in close consultation with Bank staff in DECRG’s spatial analysis team, the Environment Department and operations staff in the East Asia region; representatives of the Indonesian government; and numerous international and local NGO’s. The proposed project team has also worked closely with the GEF in the mobilization of large spatial databases on endangered species (including the tiger) to improve the GEF’s allocation of resources for biodiversity conservation.

6. What is/are the question(s) the research/data project/analysis seeks to answer?

From a formal analytical perspective, saving the tiger involves optimal spatial resource allocation with a limited budget, a short time horizon (to prevent extinction), a complex, constantly-changing spatial distribution of potential conservation benefits and costs, and the prospect of rapid, irreversible losses in areas where conservation is weak. Solving this problem will include conservation payments to local communities where appropriate; targeted monitoring and enforcement of conservation regulations where threats are greatest; and enlistment of relevant local and national actors whose identities may well differ across areas. Implementing the solution will require identification of critical drivers of habitat destruction in different areas. Combining the FORMA information with a spatially-disaggregated database of economic, demographic and geographic information, the project will both identify area-specific drivers of habitat destruction and test the effects of interventions intended to protect habitat. Using the vast new panel database available from FORMA, the proposed project will provide the first in-depth studies that relate tiger habitat loss to local economic dynamics, as well as longer-term geographic and demographic drivers.

7. Describe the broad analytical approach and specific methods to be used.

Please note the attachment: Tiger Habitat Conservation- Analytical Approach and Specific Methods

8. Summary of work program, in its entirety, specifying the activity(ies) for which KCP funding is sought.

The research program divides into two parts, and KCP funding is sought for both of them as well as for the dissemination activities discussed below.

Phase 1: Database assembly

(1) Assembly of a spatially-disaggregated FORMA digital map at 1 km resolution for all tiger habitat countries in tropical Asia: Bangladesh, Bhutan, Cambodia, China, India, Indonesia, Laos, Malaysia, Myanmar, Nepal, Thailand and Vietnam. The digital map will provide the probability of forest clearing for each 1 km parcel by month from December 2005 to June 2011, initially, with quarterly updates during the life of the project.

(3) Overlays with maps from the World Database of Protected Areas from the United Nations Environment Program and the International Union for Conservation of Nature.

(4) Overlays with other geographic, demographic, economic and land-use databases.

Phase 2: Analysis

(1) Spatial econometric analysis to identify principal determinants of protection cost in each habitat area.

(2) Testing the effect of existing protection and incentive programs on habitat conservation.

(3) Development of a rapidly-updatable model for cost-effective resource allocation that incorporates the following factors: the need to conserve specific habitats large enough to accommodate tigers; differential threats to important subspecies that must be preserved (Bengal, Siberian, South China, Indochinese, Malayan and Sumatran tigers); differences in habitat countries’ institutional capabilities and willingness to pay for conservation; and widely-differing conversion opportunity costs in remaining habitat areas.

(4) Use of the FORMA database and the econometric results to develop an early-warning system for each tiger habitat area, with links to agents responsible for conservation in those areas and near-real-time reporting on the effectiveness of their actions in conserving habitat.

9. Describe the specific deliverables or expected outputs from the project

The study will deliver two World Bank policy research working papers, journal articles, notes on biodiversity conservation, and research posters with key messages. In addition, the project will significantly contribute to the Research Department’s emerging ‘wholesaling’ agenda, in which analytical tools, information and the early warning system about significant emergent threats are made available to other analysts in addition to reports on econometric findings.


The project will produce a suite of tools and databases that can equip stakeholders at varying levels of sophistication to identify areas that offer high-priority intervention opportunities; allocate resources to those areas using cost-effectiveness principles; and track the results of interventions. These are precisely the skills needed by major stakeholders in the Save the Tiger program, and the project will make a special effort to promote their ongoing access to FORMA, tiger habitat databases and other constantly-updated information sources. These resources will be shared with stakeholders in multilateral and bilateral donor agencies, national and local government agencies, and key NGOs. Specifically, the team will collaborate with local and global stakeholders to promote use of the database and methodology for more cost-effective tiger habitat conservation.

11. Outline dissemination plans and target audience(s).

Project results and updatable information bases will be widely disseminated to stakeholders in tiger habitat countries and other tropical forest countries concerned with cost-effective species protection; These will include Bank staff in regional offices and country offices, and interested researchers in academic institutions. The databases, methodology and lessons learned will be disseminated through seminars and workshops organized by the Bank’s Biodiversity Thematic Group, South Asia Region, East Asia/Pacific Region and DEC, and at international conferences on forest and biodiversity conservation. Working papers will be posted on the Bank’s research web pages, and articles will be submitted for publication in scientific journals. At the country level, the methodology, data and findings will be shared with governments, universities and think tanks.

12. If the grant is recipient-executed, please give details of executing agency and contact information.

The proposed activity will be Bank-executed.
13. Describe the implementation arrangements, with specific attention to partnership. ie the respective responsibility of other Bank units, other donors, local agencies, institutions, consultants.

Within the Bank, the study will be administered by DEC, in close coordination with the Environment Department, the South Asia and East Asia/Pacific regions, and WBI. Bank staff contacts within the Asia region will include Herbert Acquey (SASDI), Keshav Varma (WBII), Josef Leitmann (Lead Environment Specialist, EAP), and Carter Brandon (Lead Environmental Economist, China). Outside of the Bank, interim project outputs will be presented to global and local stakeholders, including participants in the Global Tiger Initiative, IUCN, the National Geographic Society, Smithsonian National Zoological Park Conservation and Research Center, UNEP, Wildlife Conservation Society, and WWF.

14. Provide an implementation schedule by task/component (including beginning and end dates, as well as major milestones)

Please note the attachment: Tiger Habitat Conservation- Implementation Schedule

15. Identify the team members under the project (Bank staff, consultants, and local participants), including their organizational units, affiliations, responsibilities and disciplines (economists, demographer, etc)

Bank Staff:

TTL: Susmita Dasgupta, Lead Environmental Economist, DECEE (overall supervision of the project and quality assurance)

Brian Blankespoor, Environmental Specialist, DECEE (GIS analysis)

Consultants:

David Wheeler, Senior Fellow, Center for Global Development (database design; econometric analysis; resource allocation model design; collaboration in publication; dissemination)

Daniel Hammer, Department of Agricultural and Resource Economics, University of California Berkeley (FORMA database; econometric analysis; early warning model)

Robin Kraft, technical consultant (Integration of spatial databases; testing habitat protection schemes; early warning model; results display tools; dissemination)

We also anticipate adding conservation biologists and technical consultants to handle resource allocation model implementation, development of results display tools, and dissemination.

16. If your project has a data collection component, please provide a clear statement on how the collected data would be treated and made available to the external users as a public good in the spirit of the new Open Data initiative.

The proposed activity will be based on high-resolution spatial data on forest clearing, maps of tiger habitat, maps of protected areas and socio-economic data from countries. All the above mentioned data are in public domain.

The databases generated in this activity along with relevant meta data will be posted on the external website of the Research Department of the World Bank.

RELATED PROJECT INFORMATION

Basic Project Information
World Bank - Grant Funding Request (GFR)

Ref. : 8247  Status : Approved
Printed on : 09/18/2011

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<td>Team Leader</td>
<td>00073732 - Mr Michael A. Toman</td>
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Project Description
To support cost-effective resource allocation for tiger habitat conservation this project will develop three critical resources: (1) A continually-updated high-resolution database for tracking the status of remaining forest habitats for tigers in 12 Asian countries (Bangladesh, Bhutan, Cambodia, China, India, Indonesia, Laos, Malaysia, Myanmar, Nepal, Thailand and Vietnam). (2) an econometric modeling system that will identify critical drivers of forest habitat destruction and protection costs in different areas; and (3) a consistent methodology that uses information on habitat conditions, local extinction risks, habitat protection costs and determinants of forest clearing to guide cost-effective allocation of resources for habitat protection. The methodology will be designed to support rapid redeployment of resources as the regional pattern of threats and opportunities shifts over time. The project will develop a complete prototype application of the methodology for all tiger habitat areas in 12 Asian countries.

Project results and updatable information bases will be widely disseminated to stakeholders in tiger habitat countries and other tropical forest countries concerned with cost-effective species protection; These will include Bank staff in regional offices and country offices, and interested researchers in academic institutions. The databases, methodology and lessons learned will be disseminated through seminars and workshops organized by the Bank’s Biodiversity Thematic Group, South Asia Region, East Asia/Pacific Region and DEC, and at international conferences on forest and biodiversity conservation. Working papers will be posted on the Bank’s research web pages; articles will be submitted for publication in scientific journals. At the country level, the methodology, data and findings will be shared with governments, universities and think tanks.

As the wild tiger population plummets, the global community is mobilizing through the Save the Tiger program to conserve the tiger’s remaining habitat. This grant will support implementation of cost-effective strategies by developing a spatial information and analysis system to guide the allocation of program resources. Using a new source of near-real-time forest monitoring information, the system will continually reassess the cost-effectiveness of conservation opportunities in the Asian tropical forest countries where tiger habitat remains. It will also test the effectiveness of alternative approaches to habitat conservation in those countries.

The study will deliver World Bank policy research working papers, journal articles, notes on biodiversity conservation, and research posters with key messages.

The proposed research is expected to contribute significantly to the Bank’s lead role in the Save the Tiger program, because it will promote cost-effective use of the scarce resources available for habitat protection. The program will also promote transparency and credibility by relying entirely on publicly-available data and publishing all results. The project’s approach to resource allocation is also aligned with the Bank’s emphasis on cost-effective programs for
natural resource and biodiversity conservation.

**Project Milestones**

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**CHECKLIST**

The agreement governing the use of funds under this Donor fund requires, inter alia, that:

KCP - Guide in Filling Out GFR

**PROCESSING TAB**

Team Member
Optional
TTL may delegate filling out of GFR, but only the TTL can submit.

Team Leader
Required
TTL name (must be TLAP-accredited)

Reviewer
Required
Enter your RM

Aban Daruwala - DRGPS, DRGFP, DRGTR, DECGA
Joe Welch - DRGPO, DRGMG, DRGTR
Nancy Lim - DECRS
Manager
Required
Enter your manager's name e.g. Gershon Feder for DRGRU

Sector Director
Required
Enter your director's name e.g. Martin Ravallion for DECRG

Window Manager
Required
2475 - Joe Welch, 2476 / 3435 - Nancy Lim

Program Manager
Required
Ivar Cederholm

TACT
no action required from TTL
As Task Team Leader (TTL) for this grant, I confirm that the activities this grant will finance and the proposed use of grant funds comply with the above requirements.
Mr Michael A. Toman on 05/13/2011

As Window Manager for this grant, I confirm that the activities this grant will finance and the proposed use of grant funds comply with the above requirements.
Mr Joseph Michael Welch on 07/14/2011