

**Environmental Impact Assessment
and
Environmental Management Plan**

Date: 10 March 2020

CEPF Grant: CEPF-110356

Grantee: Wildlife Conservation Society

Project Title: Pragmatic protocols for restoration of ecosystem processes in Cambodia's wild

Project Location: Northern Plains Landscape and Tonle Sap Landscape

Grant Summary

1. Grantee organization: Wildlife Conservation Society
2. Grant title: Pragmatic protocols for restoration of ecosystem processes in Cambodia's wild
3. Grant number: CEPF-110356
4. Grant amount (US dollars): \$180,000.00
5. Proposed dates of grant: 1 July 2020- 30 June 2022
6. Countries or territories where project will be undertaken: Cambodia
7. Summary of the project: The project will pilot ecosystem restoration using domestic water buffalo. It will develop community based buffalo banks at three sites, which will also improve local livelihoods, and establish two herds of feral free-ranging water buffalo. The project will be overseen by an expert panel that will synthesize lessons learned and develop a ministerial decree on ecosystem restoration in Cambodia.
8. Date of preparation of this document: 10 March 2020
9. **Status of area to be impacted**

The project will be implemented in two landscapes as described below.

Northern Plains Landscape

The Northern Plains of Cambodia are the largest remaining intact block of a unique landscape that once covered much of Indochina. The landscape is one of the most spectacular and important areas of south-east Asia for biodiversity, with over 260 bird species and large mammals such as Asian elephant, gaur and banteng. The landscape is located along the border with Thailand and Laos, and contains four globally important conservation areas: most notably the 4,025 km² Kulen Promtep Wildlife Sanctuary, established in 1993 and managed by the Ministry of Environment, and the 1,900 km² Chheb Wildlife Sanctuary, declared in 2002 and managed by the Forestry Administration of the Ministry of Agriculture, Forestry and Fisheries until 2016 when management was transferred to the Ministry of Environment. These protected areas are inhabited by nearly 30,000 people in over 40 villages and sub-villages, many of which pre-date the protected areas. Local communities, who depend on rain-fed paddy or upland rice fields for their livelihoods, supplement these activities with small-scale animal raising and collection of non-timber forest products within both protected areas. Wildlife and natural resources in the Northern Plains landscape face a number of growing threats, ranging from small-scale incidents of hunting or land clearance by local people, to large-scale commercial pressures such as mineral exploitation.

The Northern Plains landscape supports some of the most important wildlife populations in the region of at least 15 globally threatened bird species, including five listed as Critically Endangered on the IUCN Red List, most notably Giant and White-shouldered Ibis. There are a total of almost 100 globally threatened or Near Threatened species in the landscape. Government agencies and WCS are working in close partnership to eliminate or mitigate these threats. These activities have focused on the development and testing of certain key conservation approaches, such as community land-use tenure, community contracts and incentives for biodiversity supportive practices by communities, most notably Ibis Rice, the Bird's Nest Protection Scheme and ecotourism, whilst simultaneously strengthening the capacity for biodiversity management by government agencies and creating an appropriate operating environment for conservation from development of Community Protected Areas (CPAs) – where communities have management jurisdiction – and protected area zoning.

Tonle Sap Landscape

The Tonle Sap Landscape consists of a number of unconnected protected areas, which taken together incorporate all of the major habitats of the Tonle Sap Lake and Inundation Zone. The project will be

implemented at two protected areas in the Tonle Sap Landscape, namely Ang Trapeang Thmor Protected Landscape (ATTPL) and the Northern Tonle Sap Protected Landscape (NTSLPL). The ATTPL was created by Royal Decree in the year 2000 and managed by the Forestry Administration until 2016 when management was transferred to the Ministry of Environment. It covers an area of 12,650 hectares of wetlands, grassland and dry dipterocarp forest. The northern part of ATTPL consists of a mosaic of habitats including dry dipterocarp, grasslands, seasonal ponds and traditional paddy fields that supports Sarus Crane (in the non-breeding season) and is one of the most important sites for Eld's Deer in Cambodia. More than 10,000 people live in 12 villages located around the periphery of the reservoir, mostly on the east and northern sides. People cultivate rice and cassava, and catch fish in the reservoir.

The NTSPL is a 31,159 hectare area established in 2016, formerly known as the Bengal Florican Conservation Areas which were established in 2010. It is now managed by Ministry of Environment. The protected area consists of six units, of which the adjacent Stoung and Chikreang sectors support nearly two thirds of the remaining population of the Southeast Asian subspecies of Bengal Florican in the largest area of floodplain grassland remaining in the Tonle Sap Floodplain. These two sectors are the only part of the NTSPL in which the project will be implemented. There are no villages in the NTSPL, but people from nearby villages use the sites for cattle grazing, fishing and collection of crickets under co-management arrangements with the Ministry of Environment. WCS have supported local communities to establish CPAs, conduct zoning, and create areas of suitable habitat for Bengal Florican outside of the protected area through the Sustainable Rice Platform.

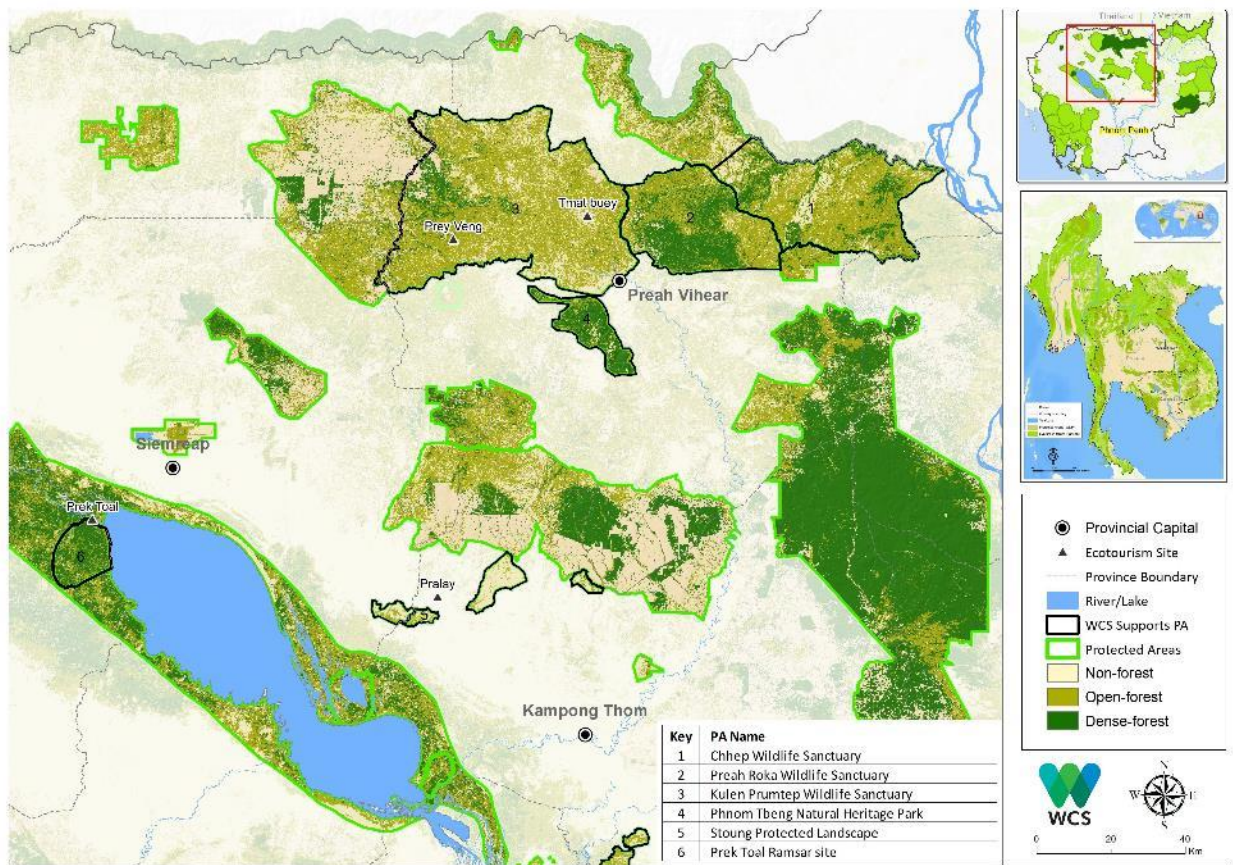


Figure 1. Project sites, and nearby protected areas.

10. Approach

Component 1. Restore foraging habitat of waterbirds through increasing populations of free-ranging and feral domestic water buffalo

Water buffalo are agents of habitat change. Although domestic water buffalo are not exact proxies for their wild relatives, they are the only readily available, relatively quick-breeding large mammal species that can replicate some of the habitat processes that have been lost from Cambodia's Indochinese Dry Forest. Wild Water Buffalo were native to Cambodia, but they have been extinct from Cambodia and neighboring countries for decades, so feral populations of water buffalo will not negatively impact wild populations.

A range of methods will be used to promote buffalo keeping at target sites, and to establish one population of feral free-ranging buffalo. These methods draw on best practice and lessons learned from BirdLife International's work with buffalos in Stung Treng and Mondulkiri Provinces. Both informal and formal consultation meetings will be conducted with BirdLife International and other relevant stakeholders to share lessons about trapeang habitat restoration, buffalo keeping and vaccination process at the Western Siem Pang Wildlife Sanctuary, so that project activities are informed by this experience.

Deliverable 1.1 List of target villages and households

Target villages in Chhep Wildlife Sanctuary, Kulen Promtep Wildlife Sanctuary (5 villages each), Ang Trapeang Thmor Protected Landscape and Tonle Sap Lowland Protect Landscape (3 villages each) will be selected based on the size of threatened waterbird populations in the surrounding area, the number and distribution of trapeangs, and the enthusiasm of the community to take part in project activities. Project implementation will be flexible in order to incorporate the different needs and perspectives of the different communities, as attitudes towards natural resource use, livestock husbandry, and the conservation value of wildlife are likely to vary between communities and between families.

Community Protected Area (CPA) committees are integral to the implementation of all field activities of the project. They will meet with WCS staff at an early stage in the project to discuss and provide input to project plans, and will be given an opportunity to volunteer their community for the project (communities can withdraw at any time). Selected CPA committees will receive training in trapeang monitoring (see below). Trapeangs will be mapped using satellite imagery and these maps will be ground-truthed by community research rangers and CPA committees.

Deliverable 1.2. Veterinary records showing reduction in mortality rate of free-ranging domestic buffalo

A total of 30 buffalo will be purchased by the Ministry of Environment (MoE) and distributed to target community members at NTSLPL and ATTPL, these animals are part of MoE's plan for developing sustainable local livelihoods for communities in protected areas. These buffalo will be provided to selected families at three sites (10 each to ATT, NTSLPL and NPL). The plans for livestock keeping under this project have been developed in consultation with BirdLife International, who have experience from Western Siem Pang Wildlife Sanctuary. It is planned that families will be given two buffalo for the duration of the project, from which the offspring produces during this period will be divided 50/50 with project owner (MoE) for distribution to other families. The veterinary care described below will also be applied to these animals.

The WCS Cambodia Wildlife Health Team (including international veterinarians) will provide basic veterinary care to domestic water buffalo in target villages. The three main diseases that impact domestic ungulates in Cambodia are Foot and Mouth disease, Blackleg and Hemorrhagic Septicemia; these are treated with Nilzan or Fasinex. Buffalo will also be vaccinated against all common diseases. The number of buffalo vaccinated will depend on how easily they are rounded up (very difficult in the dry season, with the best two periods to provide vaccinations being May to early June and October to November). The project aims to vaccinate 50% of the domestic buffalo population. As cattle provide a lesser function at trapeangs and are therefore not the direct target of this project, they will not be vaccinated. However, many households own both water buffalo and cattle, so training in animal husbandry is likely to benefit both livestock types.

WCS will organize village meetings where experts from the Department of Animal Health (part of MAFF) will provide classroom and field-based training on animal husbandry and biosecurity. Trainings will be followed up by WCS community staff, to ensure that community members are following best practice. Trainings will cover the importance of regular vaccination of animals for important and high impact diseases, the need to prevent introduction of unvaccinated animals into the village or herd without quarantine in an area separate from any other animals for 2-4 weeks and observe daily for disease signs, how to isolate all sick animals from healthy animals and ensure that they are fed last, using different equipment and avoid mixing in any way with healthy animals, the signs to look for when observing livestock daily for good health, and, how to stay alert to the status of diseases and how to change practices if a disease is threatening your area.

In return for receiving livestock vaccinations and husbandry training, households will be asked to allow their livestock to use trapeangs in the forest, including (but not exclusively) at selected project trapeangs. CPA committees and project staff will make this condition clear to villagers through village meetings, during vaccination and husbandry training sessions, and on house-to-house visits.

Deliverable 1.3 Database of free-ranging domestic and feral water buffalo, including, location, ownership, health status of all animals

The project will purchase twenty adult water buffalo and temporarily ranch them in a restricted area identified by local community members, government and WCS technical staff as of high suitability for free-ranging water buffalo. Those buffalo will be distributed ten each to Chheb and Kulen Promtep Wildlife Sanctuaries. The twenty free-ranging project buffalo will be ranched until they show signs of adaptation to their surroundings, and will then be allowed to roam and behave as wild animals. All of them will undergo health checks and vaccinations by WCS veterinarians. A selection of the buffalo will be fitted with satellite tags to monitor movements and survivorship.

Deliverable 1.4 Up-to-date database of trapeangs, including details of location and status

Community-based monitoring can be valuable in encouraging self-regulation of local natural resources while providing additional data for assessment of biodiversity trends and project impacts. This project will begin voluntary, community-based monitoring in each of the project villages with participation by CPA members. The hope is to improve local technical capacity and provide the foundations for longer-term data collection and resource management by the community, whilst gathering data that will enable WCS and MoE to monitor the effectiveness of the project.

CPA members will monitor all project trapeangs on a weekly basis. A simple Trapeang Monitoring Form (TMF) will be used by all monitors for data recording at the trapeangs. The CPA committee will submit the used TMF to project staff on a regular basis (at least once every month), and project staff will advise

CPA members on the best way of safely storing datasheets (e.g. not taking all the datasheets into the forest with them). Monitoring of trapeangs by CPA members will be undertaken alongside and in addition to the monitoring undertaken by WCS staff. As well as recording information on vegetation and area of bare exposed mud and open water, key bird and mammal species, livestock and human activities, LCG members will be encouraged to look out for individuals who are not abiding by the trapeang-use agreements, so that follow-up meetings can be held with these people.

Component 2. Develop standardized protocols for ecosystem restoration based on demonstration projects

To ensure that the project has a broad and lasting impact, we will work with government and other stakeholders to develop a set of protocols for ecosystem restoration in Cambodia.

Deliverable 2.1 Terms of reference for expert advisory panel and minutes of meetings

To ensure buy-in from government stakeholders we will form an expert and advisory panel at the beginning of the project. The membership of the panel will include government stakeholders, NGO staff, national and international experts. The role of the panel will be to review the progress and impacts of the ecosystem restoration implemented at the demonstration sites (under Objective 1), and oversee the production of the protocols.

Deliverable 2.2 Minutes of panel meetings and field visits

The expert panel will conduct quarterly meetings to review progress and impacts of the pilot, and provide advice where appropriate. Meetings will be minuted, and among other things will be used to coordinate the input of international and national experts, some of whom may be members of the panel. The panel will also visit project sites to evaluate the ecosystem restoration projects.

Deliverable 2.3 Pragmatic ecosystem restoration protocols in draft form

Based on experience gained under the project, project staff will draft pragmatic locally-appropriate protocols for ecosystem restoration. These protocols will follow the three principles outlined above: they will be conceptually simple, based on international best practice, and involve species that are benign or beneficial to communities living inside protected areas. The panel will review draft protocols for ecosystem restoration and suggest improvements.

Deliverable 2.4 Ministerial decree on protocols for ecosystem restoration

The panel will work with the General Department of Administration for Nature Conservation and Protection (GDANCP) of the Ministry of Environment (MoE) to obtain approval of the protocols for ecosystem restoration. These protocols will be promulgated through MoE to Provincial Department of Environment (PDoE). Monitoring and evaluation and evaluation processes will be conducted during and after the pilot project of where the best practices by following international standards will be integrated for improvement of replication.

Deliverable 2.5 Compliance with CEPF Social and Environmental Safeguards monitored and reported to CEPF

The project team will monitor adherence to the CEPF Social and Environmental Safeguards following the Environmental Management Plan. Reporting will be at six monthly intervals.

11. Anticipated impact

The project will increase the number of feral and domestic water buffalo in four protected areas (Northern Tonle Sap Protected Landscape, Ang Trapeang Thomr Protected Landscape, Chhep Wildlife Sanctuary and Kulen Promtep Wildlife Sanctuary). This is anticipated to have positive impacts on populations of threatened wildlife, through maintaining and creating habitat used by globally threatened bird and mammal species, specifically trapeangs (forest pools) and grassland. However, project activities might also have the following negative impacts:

- a. *Increased buffalo numbers cause undue disturbance to foraging globally threatened large waterbirds*
Buffalo are likely to wallow in trapeangs used by globally threatened large waterbirds for foraging. This wallowing behavior will help to maintain the muddy margins that are favored by waterbirds for foraging, but there is a possibility that they may flush the birds in the process.
- b. *Buffalo trample nests of ground nesting birds e.g. Bengal Florican and Sarus Crane*
Some of the globally threatened species in the landscape nest on the ground. It is possible that their nests may be trampled by oblivious buffalo.
- c. *Buffalo introduce diseases to wild native species, or to populations of domestic cattle*
Buffalo are susceptible to a range of similar diseases to domestic cattle, and wild ungulates. Without proper screening, quarantine and management there is the potential that they may introduce diseases to wild and domestic ungulate populations, causing declines in globally threatened species and/or anger from local communities if their cattle get sick or die.
- d. *An abundance of free-ranging buffalo lead to an increase in poaching*
As large, meaty animals, free-ranging buffalo are likely to be targets for poachers. As well as impacting the project outcomes directly, this may have knock-on impacts on poaching of wild species if non-selective gear such as snares are used.
- e. *Buffalo make physical changes to trapeangs used by local people for fishing*
Due to their wallowing, buffalos are likely to physically change the shape and structure of *trapeangs* in the landscape, almost all of which are used by local communities for fishing and other purposes.

12. Mitigation measures

- a. *Increased buffalo numbers cause undue disturbance to foraging globally threatened large waterbirds*
In the medium term, wallowing behavior of buffalo will create a greater area of favorable habitat for globally threatened large waterbirds for foraging. Flushing of foraging birds is likely to be temporary, and given that buffalo are already a part of the landscape, is likely to be small in scale. The project will mitigate this impact by only working in areas with a large number of *trapeangs*, so if birds are flushed from one they do not have far to fly to another *trapeang*.
- b. *Buffalo trample nests of ground nesting birds e.g. Bengal Florican and Sarus Crane*
Important nesting areas of Sarus Crane and Bengal Florican are well known to CPA committees, whose members earn a supplementary income by protecting their nests. The project will work with CPA committees and Community Research Rangers to locate nests of Bengal Florican and Sarus Crane and exclude buffalo from those areas to prevent trampling.
- c. *Buffalo introduce diseases to wild native species, or to populations of domestic cattle*

To reduce the possibility of introducing novel diseases to domestic cattle and wild ungulates, the project will follow international best practice in disease screening, quarantine and management of feral herds. WCS's Wildlife Health Team will be responsible for developing the plan for release of feral water buffalo, and will oversee all aspects of its implementation.

- d. *An abundance of free-ranging buffalo lead to an increase in poaching*
Maintaining a feral free-ranging population of water buffalo will require an improvement in protected area management, otherwise they are likely to be poached. This will be achieved using co-financing, the project will improve law enforcement by PDoE and joint PDoE-CPA committee patrols in the areas where the free-ranging herds of buffalo will be reintroduced. Improvements in patrols will be achieved through providing funding for fuel and food of patrol staff, and including these areas in the monthly patrol plans of rangers based at relevant ranger stations. Threat and the effectiveness of patrols will be monitored using SMART.
- e. *Buffalo make physical changes to trapeangs used by local people for fishing*
In the medium term, buffalo are likely to improve the fish populations in *trapeangs*, by deepening them and adding nutrients. In the short term CPA committees may choose to put in place restrictions on use of certain *trapeangs* by domestic buffalo to facilitate human use for other activities. Any restrictions that are put in place in terms of use of *trapeangs* by domestic buffalo will be voluntary and determined by the CPA committees through a participatory consultation process with the wider community.

13. **Actions to ensure health and safety**

Buffalo are potentially dangerous animals. The project will improve animal husbandry practices, which is likely to lead to a reduction in risk of injury to families that keep buffalo. Vaccination and medical care of buffalo will be conducted only by trained professionals, and all necessary precautions will be taken. Veterinary waste will be removed from the site and deposited safely off-site according to international best practice to ensure there are no negative impacts on humans or wildlife.

14. **Monitoring and Evaluation**

The project involves government and community stakeholders in monitoring project implementation and overseeing the development of the ecological restoration protocols, so that they accept and adopt them after the project has finished. CPA members will be trained in the trapeang monitoring protocol, and monthly and quarterly meetings will be conducted with CPA committees and protected area managers to gather monitoring data and deliver consolidated results. Waterbird populations will be monitored using camera traps at trapeangs. SMART will be used to monitor patrol activities and identify poaching incidents. A proportion of the free-ranging buffalo herd will be fitted with satellite transmitters to monitor their movements and facilitate more effective protection.

The project will be overseen and monitored by an expert advisory panel consisting of government and non-government stakeholders. It will meet quarterly and conduct site visits to evaluate the pilot ecosystem restoration projects.

15. **Permission of the landowner**

The project will be implemented on state public land under the management of the Ministry of Environment. A letter of support for the project from the MoE is included with the project proposal. Some of the first activities of the project are selecting the CPAs where the project will be implemented. An important part of this is obtaining permission from communities to implement the project with them, on

the land in the CPA that is managed by them. Participation in project activities by communities will be entirely voluntary, with no adverse consequences for those that do not join.

16. Consultation

WCS will implement the CEPF project as part of a landscape based approach in which all project activities are integrated into ongoing strategic plans. These plans have been developed through consultation with key government agencies at national and sub-national level, NGOs partners, target community groups, and landscape based project staff. A detailed plan for consultation of communities on specific project activities will be developed and delivered during the first two quarters of the project. The community consultation report will be submitted to the advisory panel and to CEPF after the first six months of the project.

For two decades, WCS has been supporting the Royal Government of Cambodia to manage and protect the protected areas of the Northern Plains and Tonle Sap Landscapes. The following provides an overview of the kinds of activities that are being undertaken through consultation with communities in the landscapes, into which the ecosystem restoration will be integrated:

- Consultation with local community members including women, local authorities and partners to develop zoning and management plans
- Consultation with local community including women to conduct resource use mapping
- Consultation on development and expansion of livelihood improvement activities, for example: ecotourism, Ibis Rice, and bird nest protection program
- Awareness raising to reduce the incidence of illegal poisoning
- Joint provincial and regional meetings with General Department of Local Community of Ministry of Environment to develop a Community Protected Areas (CPA) Federation.

The key stakeholder groups for the CEPF grant are:

- Target CPAs within KPWS, CWS, ATTPL and NTSLPL
- Local authorities including villages, communes, district and provincial administration
- Provincial departments, especially the Department of Environment and Department of Agriculture, Forestry and Fisheries.
- Birdlife International-Siem Pang Program and Rising Phoenix Ltd, who have significant experience in buffalo raising and ecosystem restoration
- General Department of Administration for Nature Conservation and Protection (GDANCP), who will develop the protocol for restoration of ecosystem processes
- Department of Freshwater Wetland Conservation, GDANCP
- Department of Animal Health of the Ministry of Agriculture, Forestry and Fishery
- District Government at each target site

Multiple methods will be used for stakeholder engagement and will vary according to activity, local situation and stakeholder group. Consultations and meetings with stakeholders will take place throughout the life of the project. The consultation and training methods that have been used previously and which we expect to continue to use in the project include:

- Monthly meetings with CPA committees
- Monthly meetings with protected area law enforcement teams
- Quarterly meetings with provincial working group
- Monthly meetings with Ibis Rice and ecotourism committees
- Focus group discussions with specific groups
- Exchange visits

- Suggestion boxes installed in villages

17. **Disclosure**

Upon approval of the project, this environmental management plan will be translated into Khmer and distributed to provincial and district Department of Environment and CPA committees at all project sites. A one page summary will be produced in Khmer, and through village meetings the CPA committees will distribute and communicate it to the members, some of whom are illiterate. These activities will take place during the first quarter of the project.

18. **Grievance mechanism**

A poster will be developed in the first quarter to provide local communities and other interested stakeholders with means by which they may raise a grievance with the grantee, the relevant Regional Implementation Team, the CEPF Secretariat and National Coordinator. The poster (in Khmer with pictures to enable illiterate people to understand the meaning) will inform affected local communities of the objectives of the grant and the existence of a grievance mechanism.

The poster will include contact information of Pann Sithan, the WCS Landscape Technical Advisor for the Northern Plains: WCS Preah Vihear Office, RX6G+7H Krong Preah Vihear, Preah Vihear Province, Tel. +855 12 333 537, Email: sphann@wcs.org, and Sum Phearun, the WCS Landscape Technical Advisor for the Tonle Sap Landscape: WCS Stoung Office, Krong Stoung, Preah Vihear Province, Tel: +855 97 69 80 800, Email: psum@wcs.org; as well as contact detail and address of Lou Vanny of the CEPF Regional Implementation Team: Lou Vanny, IUCN Cambodia Program, Room 592, 5th Floor, Phnom Penh Center, St. Sothearos, Sangkat Tonle Bassac, Phnom Penh, Tel. +855 12 703 033, Email: Vanny.lou@iucn.org.

The poster will be introduced to local people at all villages where the project is implemented and explained at village meetings chaired by the CPA committee. It will then be disseminated for display in people's homes. During quarterly meetings the CPA members will be reminded of the grievance mechanism and given an opportunity to raise issues.

Grievances raised with the grantee will be communicated to the Regional Implementation Team and the CEPF Grant Director within 15 days, together with a proposed response. If the claimant is still not satisfied following the response, the grievance will be submitted directly to the CEPF Executive Director via the dedicated email account (cepfexecutive@conservation.org) or by mail. Any grievances raised will be reported to CEPF during six-monthly reporting.