The Global Conservation Program
Achievements and lessons learned from 10 years of support for threats-based conservation at a landscape and seascape scale

Leader with Associates Cooperative Agreement

LAG-A-00-99-00048-00
SSO 1 (934-001-01)

World Wildlife Fund

Eastern Himalayas Ecoregion Complex: Terai Arc Landscape

Final Closeout Report

October 1 ,2001 – September 30, 2009

Date Submitted: December 06, 2010

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This publication is made possible by the generous support of the American people through the United States Agency for International Development (USAID) under the conditions of the Leader with Associates Cooperative Agreement No. LAG-A-00-99-00048-00 SSO 1 (934-001-01). The contents are the responsibility of the World Wildlife Fund and do not necessarily reflect the views of USAID or the United States Government.

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Acronyms and abbreviations

APO	Anti-Poaching Operation
BDS-MAPs	Business Development Services-Marketing, Production and Services
BNP	Bardia National Park
BZ	Buffer Zone
BZCF	Buffer Zone Community Forest
BZMC	Buffer Zone Management Committee
BZUC	Buffer Zone User Committee
BZUG	Buffer Zone User Group
CBAPO	Community Based Anti-Poaching Operation
CBO	Community Based Organization
CFCC	Community Forest Coordination Committee
CFOP	Community Forest Operational Plan
CFUG	Community Forest User Group
CNP	Chitwan National Park
DFID	Department for International Development
DFO	District Forest Office
DNPWC	Department of National Parks and Wildlife Conservation
DoF	Department of Forests
EHEC	Eastern Himalaya Ecoregion Complex
FY	Fiscal Year
GCP	Global Conservation Program
Ha	Hectare
HH	Household
IGA	Income Generation Activity
INGO	International Non Government Organization
IUCN	World Conservation Union
MFSC	Ministry of Forests and Soil Conservation
NGO	Non-Government Organization
NTFP	Non Timber Forest Products
NTNC	National Trust for Nature Conservation
PA	Protected Area
PWR	Parsa Wildlife Reserve
SNV	Netherlands Development Organization
SWR	Suklaphanta Wildlife Reserve
TAL	Terai Arc Landscape
UNDP	United Nations Development Program
US	United States
USAID	United States Agency for International Development
USD	United States Dollar
VDC	Village Development Committee
WWF NP	World Wildlife Fund Nepal Program

In memoriam

On Saturday, September 23, 2006, a helicopter crashed in the mountains of eastern Nepal, carrying passengers returning from a ceremony in Gunsa, where the government of Nepal had handed over responsibility to local communities for managing the Kanchenjunga Conservation Area. Tragically all 24 on board were killed, among them Nepal's Minister of State for Forests and Soil Conservation, the Sectretary of State of that Ministry, the Director General of National Parks and Wildlife Conservation, and the Director general of Forests, eight staff members of WWF and IUCN, and Ms. Margaret Alexander, the USAID deputy mission director in Nepal, and Dr. Bijnan Acharya, USAID Program Development Specialist. These individuals are not forgotten, and their work continues. The fact that the GCP Program has continued in spite of the loss of these vibrant individuals, is a tribute to their dedication and contributions to the sustainability of the program.

Key achievements, impacts and lessons learned attained with GCP funding

The Terai Arc Landscape – Nepal Program received GCP funding during FY02 – FY09. These eight years covered a period of great political and social unrest and change in Nepal. A review of the Program's key achievements, impacts, and lessons learned demonstrates how long-term GCP funding enabled the TAL Program to integrate achievements at both the community and landscape scales, adapting strategies and refining objectives according to the changing context and to increased knowledge and experience, thus advancing toward significant and sustainable impacts for conservation of the biodiversity of the landscape.

<u>Key Achievements</u>

1. With GCP support WWF successfully translated the concepts of landscape conservation to practice and established the Terai Arc Landscape as a model of landscape conservation. This success in Nepal inspired establishment of another landscape - the Sacred Himalayan Landscape, encompassing the biologically and culturally rich northern part of the country.
2. A long term strategic and implementation plan with a financial model for the landscape was developed by the leadership of the Government of Nepal and involving key donors, government agencies, partners working in the landscape, and communities. These documents will continue guiding government priorities and partner investment in the landscape beyond the GCP project period. Government leadership and ownership of these documents ensures the sustainability of the program.
3. The 10th 5-year Plan of Government of Nepal (2003-2007) included the TAL vision and identified TAL as a priority program for biodiversity conservation and sustainable development in Nepal.
4. Significant progress was made in improving bio-physical conditions of the landscape and management of biologically important areas:
    a. 5 functional corridors were established with scientifically recorded wildlife movement and use of the corridors.
    b. 9,687 hectares of degraded forest patches were placed under restoration through plantation and natural regeneration.
    c. 23,294 hectares of forests are now placed under improved management after handing over management rights of 186 community forests to locals following their technical and institutional capacity building.
5. Livelihoods of the targeted households in the landscape were improved through a combination of strategies:

   a. 9,249 households were supported with alternative income generation activities to reduce their dependence on forests for income.
   b. 528 biogas plants were installed in middle-income households and 3,007 improved cooking stoves installed in poorer households to reduce pressure from unsustainable firewood collection.
   c. Vulnerability of 2,000 households to human wildlife conflict was reduced.

6. Threats to biodiversity conservation in the landscape were significantly reduced:
   a. Grazing pressure on the forests was reduced through the improvement of community-based veterinary services in ten sites, promoting stall feeding practices among 1,500 households, and generating awareness of sustainable grazing practices.
   b. Rhino poaching was significantly reduced and a stable tiger population was maintained in four protected areas through improved anti-poaching operations, park management and habitat management.
   c. 34 Community-Based Anti-Poaching Operations (CBAPOs) were established, strengthened and mobilized thus significantly reducing illegal activities such as forest encroachment, illegal logging, illegal harvesting of forest products, and poaching in the landscape.
7. Community based organizations were established and their capacity built to ensure sustainability of the program:
   a. 200 community based organizations were established and strengthened for sustainable natural resources management and livelihood improvement.
   b. 3,094 members of community based organizations were trained in organizational management, account keeping, leadership, institutional development, and forest management.
   c. A successful micro-finance scheme was piloted in seven sites. Community based organizations are mobilizing a revolving fund equivalent to USD77,000 to support livelihood improvement activities. This scheme is providing the community based organizations with financial sustainability and increasing their capacity to manage and mobilize resources.

Lessons Learned A review of lessons learned over each of the 8 years of the Terai Arc Landscape program demonstrates the process of adaptive management – how monitoring has enabled learning and adjustments to improve the program's impact over time.

- Conservation of a vast landscape such as the TAL, with its huge population, complex dynamics, and many issues, is only possible through strong partnerships among stakeholders, governmental and non-governmental agencies working in the region, donors, the private sector, and other interested groups.
- The success of a landscape scale program depends on more rigorous field monitoring of activities.
- A science-based strategic plan for managing all land use in the corridors is essential and must include micro-scale management while maintaining a macro-scale perspective for conservation across the landscape.
- Implementing projects through community based organizations with clear benefits to the local people and local resource management makes it possible to continue field actions even during political instability.

- Flexibility in management and relative independence for field staff to make key decisions is crucial for enabling projects to adapt to and cope with difficult situations during armed conflict, as well as to ensure smooth operation during normal situations.

- Involving local youths in patrolling forests and anti-poaching operations can give extraordinary results in combating threats to biodiversity conservation.

- Good governance of local community based organizations is critical in order to maintain transparency of the project's financial support and also to promote equity in benefit sharing, ensuring effective participation of minorities in decision-making.

- To ensure sustainability of community based organization activities, program support should include a focus on increasing their financial capacity.

- Poor and marginalized groups have limited absorption capacity to benefit from project interventions such as income generating activities; thus, special targeting mechanisms are required to ensure these groups effectively participate in and share the benefits of project interventions.

- Providing market linkage for the products produced by local communities ensures sustainability of income generating activities.

- To build capacity of local communities in forest management and institutional development, field-based coaching is more effective, both in terms of cost and in terms of participant learning, than organized training events.

GCP program background

The goal for the entire Eastern Himalayas ecoregion is to conserve representative facets of biodiversity within habitat areas that are large enough to support the natural ecological and evolutionary processes that maintain the ecoregion. Contributing to the broader ecoregion vision, the Terai Arc Landscape program was launched in July 2001, to achieve a single functioning landscape through restoration and maintenance of forest corridors for wildlife linking 11 protected areas[1] from Parsa Wildlife Reserve and Chitwan National Park of Nepal to India's Rajaji National Park, covering an area of approximately 49,500 km. The Terai Arc Landscape – Nepal Program received GCP funding during FY02 – FY09 to work toward this goal. Forests connecting these protected areas were in various stages of degradation and fragmentation due to human population and poverty pressures. Restoring the wildlife corridors would facilitate the dispersal and genetic exchange of wildlife populations, ensure the long-term survival of key endangered species, and provide ecological and socioeconomic services integral for the well being of local communities.

[1] Chitwan National Park, Parsa Wildlife Reserve, Bardia National Park, and Suklaphanta National Park in Nepal and Corbett National Park, Rajaji National Park, Sonanadi Wildlife Sanctuary, Kishanpur Wildlife Sanctuary, Dudwa National Park, Katarniaghat Wildlife Sanctuary, and Valmikinagar Wildlife Sanctuary in India.

Location, global importance and key threats to this landscape/seascape

Description of Landscape

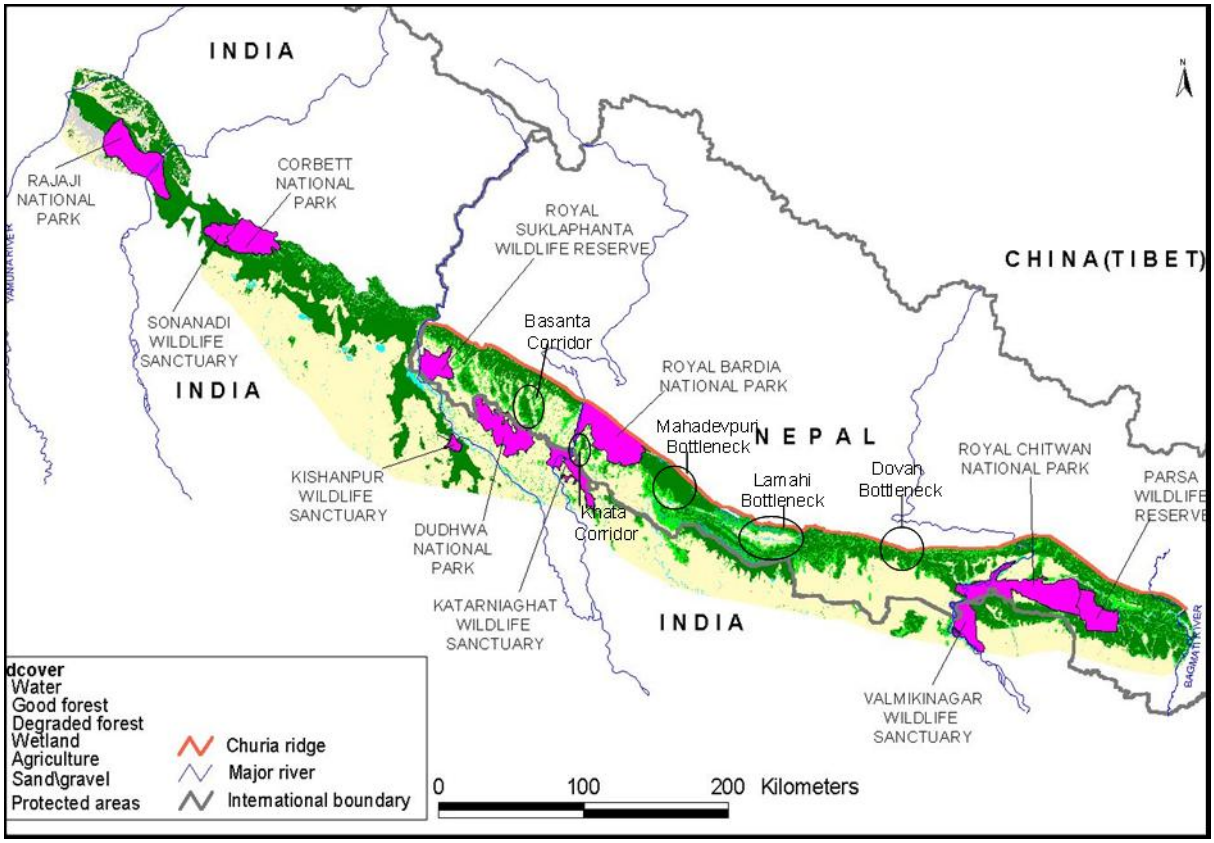
The Terai Arc Landscape (TAL) encompasses one of the most biologically diverse habitats on Earth and is part of the Terai-Duar Savannah and Grasslands Ecoregion. The alluvial grasslands and subtropical deciduous forests of TAL support 86 species of mammals, 550 species of birds, 47 species of reptiles and amphibians, 126 species of fish, and over 2,100 species of flowering plants. TAL covers the only remaining natural habitat on the southern slopes of the Himalayas for the Royal Bengal tiger, Asian elephant and one-horned rhinoceros.

The Nepalese portion of the TAL extends from the Bagmati River in the east to the Mahakali River in the west covering an area of 23,129 km. TAL – Nepal includes over 75 percent of the remaining forests of the Terai and the foothills of the Churia Range, a network of 4 Protected Areas and 3 Ramsar sites. This alluvial plain of the TAL is the rice bowl of the country, and is also home to 6.7 million people from various ethnic and indigenous groups. Conservation of the Churia forests is crucial for preventing soil erosion, flash floods, and for recharging the water table of the Terai, which is the most productive land in the country. Therefore, sustainable management of the TAL will help to maintain biological diversity and also to meet the national demand for forest products and food supplies for its rapidly growing human population.

Description of Sites

The activities for this project have focused on five critical areas:

1. **Basanta Corridor**. This corridor connects Dudhwa National Park in India with National Forest land in Nepal. Corridors serve as important links between currently distinct populations of tigers and other species.
2. **Khata Corridor:** This corridor connects Bardia National Park (BNP) in Nepal with Katarniaghat Wildlife Sanctuary in India. Rhinos and elephants are known to move between the two protected areas through this corridor. The area of Khata corridor is approximately 160.58 sq km with the width of the corridor varying from 0.5 to 4 km. The corridor has five Village Development Committees (VDCs).
3. **Lamahi Bottleneck.** This area consists of a narrow and degraded piece of forest that connects a larger continuous stretch of forest.
4. **Chitwan National Park (CNP) and Buffer Zone.** Chitwan National Park is the first National Park of Nepal. The Chitwan National Park Buffer Zone initiated the practice of Buffer Zone management in Nepal. Mobilization of community participation in conservation is still an important challenge in this area.
5. **Parsa Wildlife Reserve (PWR) and Buffer Zone**. Parsa Wildlife Reserve forms a contiguous protected landscape with the eastern boundary of the Chitwan National Park. The Reserve is dominated by Chure Hills (sal with chir pine) and Bhavar (sal forest and mixed sal forest) where soil is erodable and water is scarce, resulting in poor habitat conditions for wildlife. The recently declared Parsa Wildlife Reserve Buffer Zone urgently needs to form and mobilize the participation of local buffer zone institutions.



Map 1: Project Areas in TAL – Corridors, Bottlenecks, and Protected Area Buffer Zones

Threats

The ecological landscape of the Terai is faced with an array of immediate threats endangering the very existence of its wildlife species and habitat. Not only is the long-term viability of wildlife species and their habitat at stake, but also the sustainable future livelihoods of local communities. A Root Causes Analysis (RCA)[2] conducted in 2002 – 2003 identified **seven direct causes and seven indirect causes of environmental degradation and biodiversity loss** in TAL. These causes were then analyzed and used to form the TAL-Nepal Strategic Plan. Taking into account the strengths of WWF, along with available funding and long-term goals, we identified the direct and indirect threats that we could most effectively tackle in the GCPII project. The direct causes we addressed include:

- **Forest conversion due to agricultural expansion and encroachment**. Forest encroachment in TAL has increased at an alarming scale recently threatening wildlife habitat, degrading ecological services of the forests and depleting natural resources base of the local communities. This problem owes to prolonged political transition and resultant weak coordination among government agencies as well as weak law enforcement.
- **Unsustainable harvesting of timber**.
- **Unsustainable extraction of fuel wood and other forest products**.
- **Overgrazing in public and private forests**.

[2] RCA is an analytical and logical tool that enabled TAL to identify a set of factors that are the main drivers or causes behind environmental degradation and biodiversity loss in the landscape.

- **Wildlife poaching**. Increase in poaching of rhino and tiger has posed a severe threat to survival of these endangered species in TAL. Prolonged political transition and resultant weak law enforcement by government agencies have provided fertile ground where illegal activities such as poaching flourish.

The indirect causes we addressed include:

- **Lack of off-farm livelihood opportunities**.
- **Inadequate access to and management of forest resources**.
- **Cross border issues.** The trans-boundary issues involved in the TAL are of special concern in this project. Since Nepal and India have an open border, cross border issues such as timber smuggling, wildlife trade, poaching and cross border grazing are rampant. However, there is currently no effective mechanism to regulate and monitor cross border illegal activities in Basanta and Suklaphanta.

GCP partner historic and current roles in this landscape

WWF has a long history in Nepal. WWF's association with Nepal started in 1967 providing support to the government of Nepal to conserve rhinos and tigers in Terai. Since then WWF has played a critical role in Nepal's conservation history supporting capacity building and pioneering a cutting edge conservation approach in Nepal. WWF has been a constant companion of the government of Nepal as conservation evolved from species based conservation to a protected areas system, to integrated conservation and development projects, and lately to landscape level conservation. Some of the notable achievements in Nepal include successful translocation of rhinos, establishing an ecotourism model in Annapurna Conservation Area, and handing over the management of Kanchenjunga Conservation Area to local communities.

WWF's ecoregion concept encouraged the development of the vision for TAL, and WWF shared the vision with partners and government in 2001. The Government endorsed the vision and included TAL as a priority conservation program in its 10th plan. TAL is thus a joint program of the government and WWF. Through its field offices WWF has provided coordination with partners and stakeholders, as well as technical and financial support to CBOs, district forest offices, and protected area offices, to implement and monitor the program.

GCP partner approach to threats based conservation at a landscape scale

The WWF Approach to Large-scale Conservation

The World Wildlife Fund's (WWF) approach to large-scale conservation began in the late 1990s with the development of the Global 200, a biodiversity priority setting exercise that used a representative approach to select 238 of the earth's most outstanding terrestrial, freshwater, and marine systems (Olson & Dinerstein, 1998). Subsequently, WWF embarked on ecoregion-based conservation planning in which spatial priorities were identified in many of the Global 200 regions. Ecoregions are defined by WWF to be relatively large units of land containing a distinct assemblage of natural communities and species, with boundaries that approximate the original extent of natural communities prior to major land-use change (Olson et al., 2001). Ecoregions are often larger than landscapes but not always. In essence, WWF realized that only at relatively large scales (generally greater than single protected areas) could conservation planning and implementation adequately understand and preserve habitats and ecological processes. Since the first ecoregion-based conservation planning workshop was held in 1997, for the Chihuahuan Desert, there have been more than 30 ecoregion (or ecoregion complex) analyses. Across all these planning analyses priority areas for conservation implementation

were identified based predominantly on biological characteristics. Priority areas within ecoregions (or ecoregion complexes), while varying greatly in size depending on the specific region and set of local circumstances, form the basis for WWF's landscape-scale conservation planning and implementation. However, in some cases, landscape-scale conservation planning has been performed for entire small ecoregions. The same large-scale planning needs concerns (representation of habitats and species in protected areas, incorporation of ecological processes in spatial plans) are believed to be applicable at both ecoregional and landscape scales. However, only at the small-ecoregion and landscape scales does planning address the spatially explicit decisions required to make a conservation plan practically implementable.

There are two important aspects of WWF's approach to spatial landscape planning. Firstly, strategic planning for conservation action is a critical complement to spatial planning. WWF uses a best practice strategic planning framework called the WWF Program Standards (WWF, 2005), which is similar to The Nature Conservancy's Conservation Action Planning and is derived from the Conservation Measures Partnership's Open Standards for the Practice of Conservation (Conservation Measures Partnership, 2007). Ideally, spatial planning and strategic planning are seamlessly integrated. (See the WWF Close-Out Report for the GCP Global Learning Component for more information regarding the GCP contribution to the development of the Open Standards and the WWF Program Standards.)

Secondly, WWF is a network of semi-independent country organizations (often referred to as the WWF Network), and there are no mandated approaches to conservation planning at the ecoregion or landscape scale. Consequently, there is a wide variety of approaches used in different countries and under different situations that have to do with data availability, conservation targets, and opportunities to coordinate with partners. Furthermore, WWF's approach to ecoregion and landscape-scale conservation planning has continued to evolve, especially as systematic conservation planning software and other tools have became increasingly available and user-friendly over the past decade.

WWF's landscape level conservation planning approach aims to address the goals of: (1) Representing all distinct natural communities within conservation landscapes and protected area networks. (2) Maintaining ecological and evolutionary processes that create and sustain biodiversity. (3) Maintaining viable populations of species. (4) Conserving blocks of natural habitat that are large enough to be resilient to large-scale stochastic and deterministic disturbances as well as to long-term changes (Dinerstein et al., 2000, modified from Noss, 1992).

Knight et al. (2006a,b) divided conservation planning into conservation assessment and implementation. Conservation assessment methods used in the WWF Network vary considerably, even within a single region. Some are strictly stakeholder-based workshops whereas others involve planning software (with or without stakeholders). The systematic rigor of conservation assessments has varied considerably within WWF, but implementation has always been of paramount interest because of a traditional low tolerance for planning (what Knight calls "assessment"). We define implementation as the extent to which areas identified as priorities have been turned into protected areas, are being managed explicitly in such a way as to preserve critical ecosystem function, or are incorporated into government planning. The level of implementation is generally believed to be a function of a high level of expert, local, and government support, which are in turn interrelated. The support has been achieved through early and prolonged staff engagement of the various stakeholders, including their active participation in the assessment results. Costs (either threat costs or actual monetary costs) have been considered in some cases, and this probably increased the likelihood of implementation because, to the extent possible, priority areas were selected where costs were lower. The extent to which cost considerations will affect eventual implementation is unknown but it is among an array of political and cultural factors that will

affect the final outcome. However, the completion of a conservation assessment will not necessarily result in the implementation of the plan. Although the ideal scenario is that WWF hands over a conservation assessment to government organizations to implement, more often WWF maintains ongoing engagement with relevant stakeholders to monitor the process of implementation (e.g. establishing protected areas and improving management). This process often takes years.

WWF's initial efforts at large-scale planning were heavily skewed towards expert-driven workshops involving many experts and stakeholders but less repeatability (Mittermeier et al., 1994). More recently, many of WWF's ecoregion and landscape conservation planning efforts have involved more systematic approaches. These systemic conservation planning efforts have involved varying levels and formats of expert and stakeholder input. This reflects a shift towards greater rigor as systematic conservation planning tools have become more prevalent, user-friendly and documented in the scientific literature.

The advantages of entertaining a variety of approaches are many. Each landscape has its own unique combination of culture, capacity, data, resources and geography. Providing for a variety of methods that can be chosen and mixed depending on the specific situation provides maximum flexibility to a diverse organization. In general, the variety of assessment approaches within WWF reflects differing time and budget constraints, the amount and quality of data available, perceived stakeholder capacity, WWF technical staff capacity, and the technical interest of WWF country programs.

Terai Arc Landscape: planning for large vertebrate connectivity, with government planners

The selection of the Terai Arc Landscape for further planning resulted from several conservation priority setting exercises. The landscape was selected as an important biodiversity conservation area representing the biodiversity of the Terai-Duar Savannah and Grasslands ecoregion (Wikramanayake et al., 2001a) of the Himalayas. Several conservation targets in this landscape are large vertebrates, and the goal was an attempt to create a landscape extensive enough to support metapopulations of tigers, greater one-horned rhinoceros *Rhinoceros unicornis*, and Asian elephants *Elephas maximus* along the Himalayan foothills, inner and outer valleys, and the Terai or floodplain grasslands. In 1997 a regional assessment of priority tiger conservation units identified eight landscapes along the length of the Himalayan foothills and alluvial grasslands of the Ganges and Brahmaputra rivers (Wikramanayake et al., 1999). A subsequent range-wide analysis of Asian elephant and rhinoceros populations identified the western Terai as harboring globally important populations (Kemf & Santiapillai, 2000).

The Terai-Duar Savannah and Grassland ecoregion, globally significant for its biodiversity, is among the most converted and fragmented ecosystems in the Himalayan region (Wikramanayake et al., 2001 b). The challenge was to conserve and restore habitat and maintain connectivity among core areas that harbor important populations of the tigers, elephants and rhinos.

The primary focus of the planning was to connect core areas for the vertebrates and identify keystone habitat, especially the *Saccharum spontaneum* that dominated riverine grasslands and riverine forests requiring restoration. The objectives were to conserve other threatened species, ensuring the livelihoods of the local people who still depend heavily on forest and natural resources, and protecting the ecological services, especially hydrological flows, that support biodiversity, local communities and local and national economies (Wikramanayake, unpubl. data). The spatial extent of the landscape was between the Yamuna River in north-western India and Bhagmati River in Nepal, within which there are 11 protected areas. All the protected areas within this landscape harbor important tiger populations. The tiger's current range distribution does not extend west of the Yamuna River and tigers have not been reported to the east of the Bhagmati River in recent years. The greater one-horned rhinoceros population in the western part of the Gangetic plain is also contained within these boundaries.

We set long term (to 2020) conservation goals for the megaspecies: (1) > 500 breeding tigers across the landscape, managed as a metapopulation with corridors facilitating dispersal between the protected areas; (2) > 1,500 greater one-horned rhinoceros in three populations, centered around three protected area complexes; (3) two ecologically and demographically viable Asian elephant metapopulations within their home ranges and migration pathways. Planning began with a reconnaissance survey to assess and ground-truth land and forest cover maps, and extensive discussions with local stakeholders, including villagers, local administrators, Community Based Organizations, and NGOs, to obtain feedback regarding the feasibility and potential acceptance of a wildlife conservation landscape.

The tiger was selected as a focal species to identify potential corridors because, despite being a habitat generalist, it is less tolerant of disturbance and less likely to cross gaps than the other two megaspecies. Forest/land cover maps, and tiger ecology and behavior-related parameters were then used in a GIS-based cost-distance model to identify potential corridors and bottlenecks that would need to be restored to improve connectivity between core areas (Wikramanayake et al., 2004).

The Goal of the GCP-supported Terai Arc Landscape Program was to achieve a single functioning landscape through restoration and maintenance of forest corridors for wildlife linking 11 protected areas[3] from Parsa Wildlife Reserve and Chitwan National Park of Nepal to India's Rajaji National Park, covering an area of approximately 49,500 km.

Implementation has faced challenges but progress has been made. Habitat restoration activities over the past 5 years in the Nepal Terai Arc Landscape have resulted in five corridors currently being used by tigers and three by rhinos and elephants.

Implementing conservation at a landscape or regional scale: overcoming challenges, grasping opportunities and managing adaptively

An analysis of the Root Causes of degradation of the biodiversity of the Terai Arc Landscape identified 5 specific threats:

- Forest conversion due to agricultural expansion and encroachment;
- Unsustainable harvesting of timber;
- Unsustainable extraction of fuel wood and other forest products;
- Overgrazing in public and private forests;
- Wildlife poaching;

and three underlying causes:

- Lack of off-farm livelihood opportunities (economic context);
- Inadequate access to and management of forest resources (Management System);
- Cross border issues. (government policy & legislation).

WWF's strategic approach to restoring the forest corridors, connecting the 11 protected areas to form a single functioning TAL landscape, has addressed these threats and underlying causes in a multipronged, but integrated approach focusing on **local forest management** and **forest-friendly sustainable livelihoods for those communities exerting the most serious pressure on the landscape**. These two approaches are important

[3] Chitwan National Park, Parsa Wildlife Reserve, Bardia National Park, and Suklaphanta National Park in Nepal and Corbett National Park, Rajaji National Park, Sonanadi Wildlife Sanctuary, Kishanpur Wildlife Sanctuary, Dudwa National Park, Katarniaghat Wildlife Sanctuary, and Valmikinagar Wildlife Sanctuary in India.

because they both utilize local ownership and empowerment as a means to foster long-term conservation responsibility. This local management and livelihoods approach also means that an exit strategy for donor organizations is built into the project once communities achieve sufficient capacity. In order to carry out this strategy, WWF has relied on its strong experience of successful partnerships.

Collaboration with stakeholders provided the foundation for the TAL strategic approach. Given the complexity of the landscape's importance to the country - in terms of agriculture, water, timber, transport, and conservation - TAL has developed a multi-stakeholder involvement process. The TAL Strategic Plan provides a platform for cultivating and influencing partnerships in conservation and development across the landscape. At the community level, partnerships aim to strengthen and empower ownership of conservation efforts and creation of sustainable natural resource management mechanisms. These aims are supported at regional and national levels by the TAL Strategic Plan and TAL Implementation Plan which focus on leveraging funding and coordinating efforts across the landscape level.

An enabling policy environment is crucial for successful implementation of the program. Thus, one of WWF's strategic approaches is to influence policy at the national level. For example, exploration of oil and gas in corridors and protected areas in TAL will likely have negative impacts on biodiversity. WWF worked with the Nepal Bar Association to review national policy on oil and gas exploration as well as agreements between the government and the companies. The findings of the review were disseminated to decision-makers and government agencies. Stakeholders were educated about the potential negative impacts of oil and gas exploration on biodiversity and natural resources, and WWF's position on the need for conservation-friendly exploration practices. These actions were used to educate key decision-makers and stakeholders on the adverse impacts of oil and gas exploration in protected areas, corridors and the Churia watershed on biodiversity and wildlife. Although these activities did not induce any changes in policy, they were successful in sensitizing the key-decision makers and stakeholders to these challenges, which is also instrumental for creating a foundation for successful advocacy activities on oil and gas exploration issues in the future.

The key actors in TAL are outlined below:

- **Community Forest User Groups (CFUGs)**: CFUGs are membership based local institutions which have ownership of the natural resources such as forests and also have a legal basis for management of natural resources. CFUGs have become instrumental in local capacity building in sustainable natural resource use through participatory decision making and equitable benefit sharing practices. Likewise, in the absence of local elected bodies, they have also become instrumental in looking after development activities and community affairs at the user level. CFUGs are the real on-the-ground implementers of forest restoration, natural resource management and livelihoods development-related activities.
- **Community Forest Coordination Committees (CFCCs) and Buffer Zone User Committees (BZUCs):** CFCCs and buffer zone institutions share benefits from and participate in conservation activities. These stakeholders are involved throughout the process, from identification of needs through participatory planning, to implementation of project activities and monitoring. CFCCs are composed of representatives from a network of federated CFUGs in a particular site. These CFCCs facilitate planning of CFUGs and provide financial support, channeled from WWF-Nepal and other donors, to CFUGs. CFCCs also monitor the activities implemented by CFUGs and coordinate with service delivery agencies and other projects/programs in the areas to ensure efficient delivery of services to the local users. BZUCs are legal bodies to implement buffer zone management activities in close coordination with the protected area offices and conservation projects. Conservation and natural resource management-related activities of TAL in buffer zones are implemented in partnership with BZUCs.

- **District Forest Offices (DFOs), protected area (PA) offices and NGOs** are the key stakeholders directly involved in partnerships for implementation of the project activities. Since corridors and bottleneck areas are under jurisdiction of DFOs, restoration and conservation activities of TAL in these areas are implemented in close coordination with them. DFOs provide necessary technical and legal support to local communities to carry out restoration and conservation activities.
- **District level sectoral agencies such as the District Livestock Development Office, District Agriculture Development Office, Small and Cottage Industries Development Office** constitute stakeholders who have enormous impact on conservation. These types of stakeholders are involved in project planning to ensure integrated regional planning and effective service delivery to the project beneficiaries.
- **National government agency partners** include the Ministry of Forests and Soil Conservation, Department of Forest, and Department of National Parks and Wildlife Conservation.
- **National NGOs** constitute another category of stakeholders who are contributing to the conservation and development through their own programs. These include National Trust for Nature Conservation (NTNC).
- **Donor agencies, international non-governmental organizations (INGOs) and development projects** including USAID (Strengthened Actions for Governance in Utilization of Natural Resources (SAGUN), Population, Health and Environment (PHE)), SNV Nepal, DFID Livelihood and Forestry Program (LFP), and United Nations Development Program (UNDP) are also coordinating at appropriate levels to achieve synergy in program implementation. These are key partners involved from the onset of TAL in leveraging funding and impact at the landscape level.
- **Trans-boundary Partners** include WWF-India, the District Forest Offices, Protected Area Offices and local communities in the Terai border area of India.

Sustainability

The Government has prepared the TAL strategic and implementation plan to bring synergy among various government levels and other partners working in the landscape to focus on the vision of TAL. The Government of Nepal has also established a TAL support unit in the ministry to coordinate all the stakeholders' functioning at the landscape level. TAL has also been included as a priority conservation program in the 10th five-year government plan.

To ensure sustainability at the community level, WWF and its implementing partners have formed and established functional people-based organizations, governance mechanisms, local leadership, capacity building, and self financing mechanisms. Community forest coordination committees, which are purely non-political conservation-based legally registered CBOs, have internalized the vision of TAL. In a short period of time, CFCCs established standard governance mechanisms such as office operation, cooperative operation, CBAPO guidelines, rules and regulations. CFCCs and cooperatives are now self managing their running costs, and many activities initiated by TAL have become a part of their regular activity financed by income from their community forests. Likewise, BZMCs are a permanent organization formed under buffer zone regulations which receive 30 to 50 percent of the total Park revenue for conservation and development activities.

Government line agencies such as District Forest Offices, Protected Area Offices, and other partners are also supporting implementation of TAL program.

WWF's two strategic approaches - Local forest management and forest-friendly sustainable livelihoods for those communities exerting the most serious pressure on the landscape - are important because they both utilize local ownership and empowerment as a means to foster long-term conservation responsibility. This local management and livelihoods approach means that an exit strategy for donor organizations is built into the project once communities achieve sufficient capacity. In order to carry out this strategy, WWF has relied on its strong experience of successful partnerships.

As WWF worked across these institutions, a core strategy has been to build effective partnerships with local communities as resource managers, beneficiaries and long-term stewards of the forests and natural resources. The involvement of local communities throughout the project process is instrumental for ensuring local ownership. Emphasis has also been given to inclusion of women, marginalized, poor and deprived people to ensure equitable benefit sharing to promote good governance in natural resource management. This is also important since the poorest people are often the most directly dependent on natural resources. As a result, sustainable livelihoods are a key strategy aiming to boost participation and build ownership of conservation efforts, but also to provide alternatives that reduce pressure on forest products.

In addition to building ownership of conservation efforts among a variety of partners, the TAL Program has worked to build capacity of local organizations through direct training, training of local resource persons who can sustain support over the long term, and by institutionalizing guidelines and best practices for networks of CBOs such as the Community Forest User Groups, the Community-Based Anti-Poaching Operations, and CBO micro-financing schemes to improving livelihoods.

Measures of success

The Terai Arc Landscape, an ambitious transboundary landscape level conservation program envisioned to establish connectivity between and among the protected areas allowing the ecological interaction and integrity between people, wildlife and ecosystem, has been translated into reality. The corridors and bottlenecks have been well restored and are now functional as envisioned, as evidenced by sightings of wildlife (mainly the tigers, rhinos and elephants) in the corridors and bottlenecks. In parallel, as a result of bio-diversity conservation and wise use of natural resources, the people's livelihoods have been improved while the financial capital and institutional capacity of the implementing CBOs have also been considerably increased. The active mobilization, participation and voluntarism of the community members in integrated conservation and development programs have brought visible changes in the corridors, bottlenecks, buffer zone areas, and communities of the TAL area.

Financial sustainability of the project had been a major concern of the project since its inception. Thus, the TAL Program formulated and implemented strategies to ensure financial sustainability of the projects. The micro-finance scheme for biogas promotion is one such good example of financial sustainability. Now the local communities are managing a revolving fund equivalent to USD 400,000 for micro-finance schemes to promote biogas. The 90% loan repayment rate shows the high prospect of financial sustainability of the biogas program. This has ensured sustainability of micro-finance institutions as well. The case is similar with micro-credit schemes for Income Generating Activities (IGA). IGAs are financed through micro-credit schemes managed by the communities. Furthermore, multi-purpose cooperatives (providing services for saving, credit marketing, etc.) are promoted and strengthened so as to ensure institutional sustainability and legality of micro-finance systems operated by the local communities. Institutional capacity of the CBOs is a prerequisite for sustainability of the project outcomes. The project has made substantial investments in terms of technical and financial

supports to CBOs, and they are now capable of carrying out the activities, when provided financial support from the project. Similarly, legality is another prerequisite for sustainability of CBOs. CFCCs are registered in the District Administration Office and affiliated to the Social Welfare Council as NGOs. This has ensured legality of CBO partners. CFCCs are the major implementers of the programs on the ground.

Conceptualization and internalization of the landscape scale bio-diversity conservation approach for the first time in Nepal by all conservation organizations and government is major success of TAL. TAL was also reflected in the Government of Nepal's 10th 5-year plan and Interim Plan (FY2008-2010). After the success of TAL, the Government of Nepal endorsed and implemented Sacred Himalayan Landscape (SHL) Program in the Mountain and just recently, the Kailash Sacred Landscape (KSL) Conservation Initiatives has also been conceptualized by the GoN in technical support of ICIMOD. GoN has taken over ownership the TAL program and subsequently provided support and resources. TAL strategic documents (implementation plan and strategic plan) came into action as a result of government ownership and with an aim of streamlining resources within the landscape (partner organization).

Strategic partnership developed by the project with BDS-MAPs (Business Development Services-Marketing, Production and Services) was an important step in promoting NTFPs in TAL, while WWF support in bringing GEF fund to operate WTLCP in the western Terai was another important achievement contributing to the landscape conservation approach. Business Development Services/ Marketing, Production and Services (BDS/MaPS) was a joint venture for Non Timber Forest Products' with support of Winrock International, ANSAB, IDE and LOTUS Opportunity which had implications for the sustainability of activities carried out by TAL in NTFPs sector thereby adding value to the project interventions.

Landscape level survey and population estimates of mega fauna, mainly the tigers and their prey base, rhinos and elephants is another major achievements of TAL Program. Mobilization and support to anti-poaching operations and community based anti-poaching operations groups is one of major achievement in breaking middle chain of traders. There has been tremendous effort in controlling poaching and wildlife trades, but still poaching of wildlife and trade of wildlife parts, especially of the rhinos, have been a great challenge. Continued encroachment of habitat / corridors and poaching of wildlife (which is a socio-political and transboundary issue) which led to decline in tiger and rhino population has become the failures / disappointments for the TAL program. Despite such tremendous efforts and resources put by the program, the poaching and encroachment could not be stopped. But still, if this control measures were not done at all, the result would be more severe and unexpected.

Advances toward achievement of the TAL Vision: **a single functioning landscape through restoration and maintenance of forest corridors for wildlife linking 11 protected areas from Parsa Wildlife Reserve and Chitwan National Park of Nepal to India's Rajaji National Park, covering an area of approximately 49,500 km.**

- Habitat restoration activities over the past 5 years in the Nepal Terai Arc Landscape have resulted in five corridors currently being used by tigers and three by rhinos and elephants.

Abatement of Threats:

- **Forest conversion due to agricultural expansion and encroachment.**
- **Unsustainable harvesting of timb**er.
- **Unsustainable extraction of fuel wood and other forest products.**
- **Overgrazing in public and private forests.**
- **Wildlife poaching.**

Forest land encroachment is one of the most serious threats for biodiversity conservation in the TAL area. Support provided for raising awareness, law enforcement, and community mobilization have resulted in over 33,000 ha. of forest under restoration in corridors and bottlenecks and bringing more and more forest areas in the buffer zone and outside protected areas under community management and ownership. Despite community and government efforts to control encroachment due to limiting factors such as failure of government to fulfill the commitment to provide land to kamaiyas (free bonded laborers), the huge migration from the hills to Terai, due to insecurity and the weak law and order situation, remains a big challenge.

Preparation and building capacity to implement improved forest operation plans; good governance practices; assured ensured local ownership have increased sustainable harvesting of natural resources, as evidenced by the improved condition of the forest.

Various activities that encourage stall-feeding combined with improved veterinary services, adoption of alternative energy like biogas, improved cook stoves, bio-briquette, etc. have reduced grazing pressure (over 80 percent of the households of critical corridors and bottleneck areas now do not graze cattle in the forest) and fuel wood consumption.

Overcoming Limiting Factors:

- **Lack of off-farm livelihood opportunities (economic context).**
- **Inadequate access to and management of forest resources (Management System).**
- **Cross border issues (government policy & legislation).**

Efforts were made to provide communities with alternatives to their traditional system of earnings from natural resources such as unsustainable harvesting and trade of NTFPs, extraction and sale of firewood, grazing, timber smuggling, etc. All the alternative income generating activities were operated and financed through micro-credit schemes managed by the communities. Furthermore, multi-purpose cooperatives (providing services for saving, credit, marketing, etc.) are promoted and strengthened so as to ensure institutional sustainability and legality of micro-finance systems operated by the local communities.

Since its inception, the TAL facilitated formation of community forest user groups and buffer zone community forest user groups in order to introduce better management practices, thereby restoring corridors and bottlenecks. These activities were carried out through technical support from district forest offices and protected area offices. Likewise, both technical and financial support was provided for revision of community forest operation plans and group charters.

GCP funding support in TAL was prioritized for building capacity of community forest user groups (CFUGs) in sustainable management of forests and institutional development. The CFUGs were equipped with basic techniques, equipment, and knowledge for participatory biodiversity monitoring in their respective community forests. Through their involvement in participatory biodiversity monitoring, CFUG members have been sensitized to prioritize biodiversity conservation in community forest management. Participatory biodiversity monitoring is expected to provide important monitoring data and baseline indicators to measure the success of the project. The monitoring data collected by the local communities will be useful also for technical analysis to identify changes in biodiversity and status as a result of sustainable forest management. Therefore, one of the major focuses of GCP was capacity building in community forests and participatory biodiversity monitoring.

The trans-boundary issues in TAL area are of special concern in this project. Since Nepal and India have an open border, cross border issues such as timber smuggling, wildlife trade, poaching and cross border grazing are

rampant. Currently there is no effective mechanism to regulate and monitor cross border illegal activities in Basanta and Suklaphanta. This project has initiated community-led trans-boundary meetings around Khata and Basanta corridors. In addition, landscape level co-ordination meetings have been organized between India and Nepal to share lessons learned and best practices, and solve issues regarding the cross-boarder area. These meetings were fruitful in establishing understanding and co-ordination to control illegal activities and poaching at cross-border areas.

Despite tremendous efforts to control poaching of wildlife and encroachment of habitat/corridors (which is a socio-political and transboundary issue), these continue to be a major threat leading to a decline in tiger and rhino populations, as well as habitat destruction. Through encroachment, hundreds of hectares of forest land in the corridor have been converted into settlement and agricultural land. Thus, despite tremendous efforts and resources invested by the TAL program, the continued encroachment of corridor forests and decline in numbers of Tigers and Rhinos have become the major disappointments. But still, if the TAL program control measures had not been implemented, the result would be more severe and unexpected

Value of the GCP program

GCP support was received when there was a global debate on landscape approach to conservation, with a lot of skepticism about its relevance. USAID funding was crucial in clarifying the myths about landscape scale conservation and in translating the concept into reality. Without GCP funding it would not have been possible to successfully demonstrate a landscape level project and obtain buy-in from the government and other partners. GCP support also came at a time when the country was going through armed insurgency. The support played an important role in providing basic services to the communities at a time when the government presence in these areas was almost nil. USAID being a powerful and trusted donor partner, TAL could be initiated and established on the ground. The threat based approach has kept the project focused on key issues so that tangible results were achieved in the fields of conservation and local stewardship.

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