

Strategic Plan
Snow Leopard
Conservation in Pakistan

February 2008



Ministry of Environment
Government of Pakistan

Strategic Plan

Snow Leopard Conservation in Pakistan

Initiated, facilitated and written by

Ashiq Ahmad Khan

Chief Technical Advisor, WWF Pakistan

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Design & layout : Fakhr Alam and Ahmad Khan, Pakistan Wetlands Programme

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Written and compiled: Ashiq Ahmad Khan, Chief Technical Advisor, WWF Pakistan Wetlands Program

Edited & composed: Ahmad Khan, Programme Manager, Regional Programmes, Pakistan Wetlands Programme

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Tel: +92-51-9203726

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Tel: 051-9203726
Fax:051-9202142
e-mail: wani48@hotmail.com

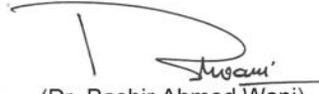
Government of Pakistan
Ministry of Environment



Islamabad February 28,2008

INSPECTOR GENERAL FORESTS/
MEMBER SECRETARY NCCW

This Snow Leopard Conservation Strategic Plan for Pakistan (February 2008) developed by WWF-Pakistan in consultation with the NCCW, Provincial Departments and relevant stakeholders is endorsed by the Ministry of Environment for implementation by the concerned agencies/authorities.


(Dr. Bashir Ahmed Wani)

Foreword

The Government of Pakistan, through the Federal Ministry of Environment and Provincial Wildlife Departments, is undertaking efforts to protect the biodiversity of the country in general and endangered and threatened species in particular. The task becomes much easier if certain guidelines are available to follow to reach the goal. Such guidelines are available in the strategic plan for the conservation of snow leopard in Pakistan.

The Ministry of Environment appreciates the efforts of all the scientists and the conservationists, who contributed to the development of this important document. The initiative of World Wide Fund for Nature Pakistan (WWF P) and International Snow Leopard Trust (ISLT), in formulating this strategic plan through an elaborated consultation process with relevant stake holders, is especially appreciated. It is hoped that this will help researchers and conservationists to focus their attention on issues of immediate concern and do efforts, both individually and jointly, to tackle such issues through actions, prescribed by, and contained in the document. Responsibility matrix, attached with the document may provide further guidance on potential implementation role of various concerned agencies in the public and private sectors.

Dr. Bashir Ahmed Wani

Inspector General of Forests/Member Secretary NCCW
Ministry of Environment, Government of Pakistan
ISLAMABAD-PAKISTAN

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The document on strategic plan for the conservation of snow leopards in Pakistan was developed through the wisdom and support of, and sharing of knowledge and experience by several experts in the field of conservation. These included senior staff of Provincial Wildlife Departments of Northern Areas and NWFP and State of Azad Jammu and Kashmir; relevant officials from various projects such as MACP and AKRSP, and representatives of organizations such as WWF and IUCN and several others. The contribution of Dr. Tom McCarthy from International snow leopard Trust and Dr Rodney Jackson from snow leopard Conservancy did help to identify several critical conservation issues and suggest possible solutions to most of these. The contribution of all these and several others, who have helped in other different ways, is thankfully acknowledged.

Dr Javed Khan, Ex Coordinator, snow leopard project has been a big helping hand in the process. The peer review meeting, held in Islamabad on February 22nd 2008, chaired by Dr. Bashir Ahmad Wani, Inspector General of Forests and participated by IUCN, NWFP Wildlife Department, National Council for Conservation of Wildlife, Pakistan Wetlands Programme and others did kindly review the document and gave their valuable views. This is highly appreciated. Special thanks go to Mr. Ahmad Khan who contributed to this conservation strategy, while preparing for, and holding the snow leopard consultative workshop in Gilgit in 2001 and drafting the plan;

and subsequently on behalf of the author, incorporated the comments

of the peer review group, designed the cover page, and corrected the spellings and grammatical errors in the document.

Ashiq Ahmad Khan
WWF Pakistan
ashiqahmad@gmail.com

Executive Summary

Snow leopard is one of the charismatic animals found in the high altitudes of 12 Asian Countries including Pakistan. Its illusive looks and secretive behavior makes it attractive to scientists, yet mysterious to some extent. This globally endangered species faces several threats throughout its range of occurrence and its population is under stress. There have been certain efforts in Pakistan that are still continued to conserve relatively small population of the snow leopard, its prey species and habitat. These initiatives, though valid for all practical reasons, do need further support to strengthen them and bring at far with the magnitude of the problems that snow leopard face. As part of the efforts to conserve snow leopard, a globally endangered species, the Ministry of Environment, Government of Pakistan did encourage the development of a strategic plan. This was developed by WWF Pakistan, in close collaboration with provincial wildlife departments and other relevant stakeholders and also the International Snow Leopard Trust, USA and Snow leopard Conservancy.

This plan emphasizes the need for conserving the snow leopard, its prey species and habitat and proposes suitable actions to achieve the objectives of its conservation. The proposed actions include coordination among various agencies for joint working; managing and controlling retaliatory killings and poaching of snow leopard; controlling trade in the body parts of snow leopards; management of prey species and habitat; capacity building of the custodian wildlife departments in effective law enforcement; snow leopard surveys; and

undertaking community based conservation initiatives. The Government of Pakistan plans to implement the recommendations and suggestions, contained in the strategic plan, through various relevant agencies.

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Background

Snow leopard is found in the high altitudinal areas of 12 countries, including Pakistan. It is endangered throughout its natural range because of various reasons, major being killing by livestock owners in retaliation to loss of their livestock, killing for trade in body parts specifically fur, habitat fragmentation and loss of natural prey.

Snow leopard is important to survive not only because of its right to exist but also as integral part of the high altitude ecology, culture and socio-economic system, equal to, if not more than any other element of the same environment. It is, however not being recognized, especially in Pakistan, to the level that it deserves. Lack of awareness at all levels is one big reason for it being so. Since carnivorous by nature, it has to subsist largely on other animals found in its habitat. Natural prey, being lost or reduced substantially from many natural habitats because of uncontrolled hunting, over grazing and other biotic pressures, is substituted by domestic livestock, which in turn is the largest source of income of the pastoral communities in the alpine and sub-alpine zones. In retaliation to the loss of their livestock, herders and livestock owners kill snow leopard whenever they can. Quite often when a female leopard having cubs is killed, the orphan cubs are caught and are either sold out or may die in the custody of killer, simply because the lack of proper care. Since its pelt earns a handsome price in the market, it is a good incentive for the pelt traders. They encourage hunters and pay to the pasture community to bring them pelts. The vast natural habitats of the past have also been encroached by the growing population for habitation and conversion

to other land uses. Being left with limited natural home with no or minimum natural source of food, the snow leopards have to move out to the surrounding villages in search of food that enhances their risks to be killed by farmers when seen or trapped in corrals. Being a wild animal, the snow leopards observe no political boundaries. Their home ranges are often extended to adjoining countries where adequate protection may be lacking. Accordingly, even when safe in a country, a desirable level of snow leopard population gets difficult to maintain due to threats they face in the adjoining countries.

In addition to the above, there are several other problems that do not allow the populations of snow leopard to reach a reasonable level all over the natural zone of its occurrence, including Pakistan. Irrespective of what happens in other range states, Pakistan has fulfilled the basic obligation of giving legal protection to snow leopards. Fines and imprisonment are prescribed if such rules are violated. However, much of the violation of the existing rules may occur without being noticed. This is largely because of the nature of the terrain, which is not accessible in total to law enforcing agencies for most part of the year. Accordingly, additional efforts and approaches are required to ensure the safety of snow leopards from some of the common problems.

The conservation of snow leopard is possible only through coordinated and collaborative efforts. The Government institutions, being the custodians, have indeed a crucial role; however, the private sector organizations have equally important roles. Such roles could however, be effectively realized only if there were proper coordination between all these institutions.

In Pakistan, in addition to the Government institutions at federal and provincial levels, several Non- government organizations (NGOs) are also mandated for, and interested in the conservation of snow leopard. Since conservation in general and that of snow leopard in particular is difficult to handle through isolated efforts, joint actions would be required on part of major stakeholders. This is possible only if a strategic direction available with an agreed action plan, determined through general consensus to guide all interventions related to snow leopard conservation in its natural range.

Keeping this in view, the Ministry of Environment with technical assistance from WWF Pakistan developed a strategic plan for snow leopard conservation in Pakistan with inputs from experts and various agencies and organizations both in the public and private sectors, having interest in snow leopard conservation.

In addition to a few more priority actions that emerged in the last few years as a result of research and experience by some of the stakeholders, this document is based on various strategic actions, developed and agreed by the participants of the Gilgit workshop, held on 20th April, 2001.

Status / potential uses /objectives of the Strategic plan

As guiding and policy document on snow leopard conservation, this strategic plan will help the relevant agencies/ organizations in the

Government and private sectors, to understand the basic issues and undertake time-bound actions that would help meet the government conservation agenda at national level and fulfills its obligations under various international conventions by protecting snow leopards, its natural prey species and habitats. Since the survival of snow leopard is linked to the economy of herders and livestock owners, the document shall also help understand the delicate linkages between the two for undertaking a balanced approach so as not to allow one, to suffer because of the other. Also, research students and professionals quite often search for research areas that are important from national and international perspectives. This document shall guide them too.

Accordingly, the document has the following objectives:

- 1. Undertake appropriate actions at local, national or international level while addressing different matters, problems and issues related to snow leopard conservation, its prey species and habitats***
- 2. Guide on developing a good level of understanding amongst stakeholders for addressing the delicate linkages between the herder's economy and conservation needs of predators in general , and the snow leopards in particular***
- 3. Provide researchers with different topics that they may undertake as part of their professional assignments or research students***

Guiding principles

The strategic plan is guided by the following principles:

1. Gaps in information on different aspects of snow leopard conservation, management and research wouldn't allow any action to be effective to the desirable level; such gaps could be successfully filled in, if known to the relevant stakeholders and addressed through suitable joint efforts
2. Certain incidents, related to snow leopard conservation may be frustrating but could be source(s) of new opportunities. Any decision, if undertaken in light of an accepted approach could help greatly in realizing such opportunities
3. Conservation efforts and messages have brighter chances of success and acceptance when understood in true perspectives and undertaken in partnerships under joint responsibility. Sharing of information and resources, and lessons of successes and failures, are the basics for it to follow.
4. The right of snow leopard and its prey species to survive and flourish is more generously guaranteed and honored if the right of the pastoral community to optimize their economy is accepted and supported.
5. Searching and applying sustainable solutions for the conflicting conservation issues are more beneficial for the survival of snow leopard on long term basis than actions that may help address an issue of immediate nature but enhance community expectations to a level that is difficult for others to cope with; encourage corruption in one or the other form; or is based on practices that have no end at all.

Proposed Strategic Plan

Problem: Retaliatory killings of snow leopard by livestock owners

Reasons

- Pastoral communities consider snow leopard as a threat to the survival of their livestock, the major livelihood source for them in mountain environment;
- Damage done by snow leopard to livestock is an unbearable economic loss to herders, and is not compensated in any form by any agency under any rule or policy;
- Development interventions, when planned, designed or implemented in snow leopard habitats; or in villages of custodian communities are normally in isolation from, and in conflict with conservation needs of snow leopards;
- Livestock owners lack the required skills and capacities to minimize predation of their livestock by snow leopard both on the pastures and in corrals

Proposed Actions

- Identify depredation hotspots throughout the natural zone of snow leopard occurrence to facilitate and plan effectively for the implementation of livestock protection schemes (Provincial Wildlife Departments and WWF Pakistan, and other relevant NGOs);
- Train and support herders for having predator proof corrals and effectively guard their livestock on pastures to protect their

livestock from snow leopards (WWF Pakistan, ISLT and Snow Leopard Conservancy);

- Test and demonstrate acceptable livestock insurance schemes and provide support for the adoption of options that are more feasible under the local socio-cultural environment (Provincial Wildlife Depts., ISLT, and other relevant NGOs);
- Institutions/ departments /agencies that are involved in development interventions anywhere in the snow leopard zone may first assess the possible negative impacts of such activities on snow leopard survival and, do it only if cleared by relevant authorities. When feasible and free of any negative influences, such activities should be linked with the community commitment for conservation of snow leopard (Custodian Wildlife Depts.);
- Regulate and monitor the sale of poisonous chemicals that could cause death to any predator, especially snow leopard and their prey species, to avoid its use in killing predators (MoE, Ministry of Agriculture).

Problem: Killing of snow leopard for its pelt and other body parts

Reasons

- Communities are mostly unaware of the issues and have no interest to protect snow leopard against killing for pelts;
- Check posts to control the smuggling of pelts out are either missing or non- functional;
- Traders, even if known, are not punished because of their manipulative skills;

- Trade control organizations such as customs dept. don't lack the identification skills for various body parts of snow leopard, its smuggling cannot be effectively checked by them.

Proposed Actions

- Encourage and support the collection of information about the existing pelt markets, pelt traders and routes of pelt trade. Sharing of such information is obligatory on part of the source of information but only with the notified officials to avoid its leakage before any legal action is taken (Provincial Wildlife Depts., Traffic International, WWF P, IUCN, ISLT);
- Establish functional check posts on critical routes as identified above, to check any pelt being carried through (Provincial Wildlife Depts., Local communities);
- Introduce a reward scheme for the staff that shall actively participate in the control of pelt trade (MoE, Provincial Wildlife Depts. WWF P, IUCN P);
- Enhance, implement and monitor the amount of fines or period of imprisonment for traders dealing in snow leopard pelts (Provincial WL Depts.);
- Provide incentives for communities and general public for participation in pelt recovery and trade control programmes (Provincial Wildlife Depts., MoE, WWF P, IUCN, ISLT);
- Build capacity of the Customs Department to identify the body parts of snow leopard to effectively control its smuggling (Pakistan Customs Dept., MoE, WWFP).

Problem: Orphaned cubs generally die due to lack of appropriate care and unavailability of appropriate resuscitation services and facilities

Reasons:

- Information about orphaned cubs, left behind after their mothers are killed, are generally not shared by the community with relevant agencies;
- Delays in detecting and timely rescuing the cubs by concerned authority due to poor communication between source of the problem and staff of relevant agencies;
- Lack of needful training of staff on appropriate care of orphaned cubs;
- Lack of capacity to arrange for the release of cubs back into the wild, even when recovered from poachers;
- There is no facility, specifically designated and equipped, that accommodates orphaned cubs for its food and veterinary requirements till their future is decided upon;
- Lack of funding with relevant custodian departments to feed and provide veterinary care to an orphaned cub, even when recovered, may make them hesitant to rescue such cubs at all.

Proposed actions:

- Improve vigilance to detect and recover cubs, when captured, as quickly as possible (MoE, WWF P, ISLT, local NGOs/CBOs);

- Authorize relevant NGOs/ CBOs to rescue orphaned cubs on emergency basis and join hands with the concerned departments to jointly accommodate them for as long as required (Provincial Wildlife Depts., local NGOs/CBOs).
- Establish a facility, initially in the most problematic zone, that is properly equipped, not only to house the orphaned cubs and release them back into the wild, when decided so, but also to use it for the education of general public on the need for snow leopard conservation (MoE, IUCN, WCS, ISLT, Provincial Wildlife Departments);.
- Provide trainings to relevant staff members to handle a cub; decide on the most appropriate option for its future; and manage to release it back, if required so (WCS, ISLT, WWF P);
- Allocate funding for the rescue and rehabilitation operations to meet such demand on emergency basis (MoE, ISLT, WCS).
- Awareness raising and remedial campaign for information and education of communities located in and around snow leopard habitat (WWF Pakistan Provincial Wildlife Depts., MoE)

Problem: Snow leopards trapped in farmer's houses/ corrals are generally lost to the wild

Reasons

- Farmers are generally uninformed on who to inform or what to do with the trapped animal(s)?;
- Relevant agencies, even if informed, have generally no facility to safely rescue and rehabilitate trapped animal;

- Response received from relevant departments is low due to lack of needful resources and positive attitudes.

Proposed action

- Establish a rehabilitation centre at a convenient location, decided on the basis of its accessibility and all weather use; procure essential equipment for use in rescue operations and provide needful training to staff (MoE, WCS, IUCN);
- Publicize widely the location and contacts of such facility for it to be known to people in the snow leopard occurrence zone (WWF P, IUCN, Provincial Wildlife Depts.);
- Provide social/economic Incentives to community helping in information sharing and releasing the trapped animals (all stakeholders).
- Conduct sensitization workshops for officials of the relevant departments to bring a positive change in their behavior and build their capacity in responding to emergency of trapped snow leopards (WWF P, IUCN, ISLT)

Problem: Fragmentation of the snow leopard habitat affects the survival of a viable population

Reasons

- Habitats, crucial for the survival of snow leopard, have not been properly identified and notified as *protected* against negative developments;

- Development of infrastructure is done haphazardly and without following the legal procedures as laid down in various rules related to environment and biodiversity conservation.

Proposed Actions

- Identify, demarcate, and map the crucial snow leopard habitats (Provincial Wildlife Depts., WWF P, ISLT, NCCW);
- Use Environmental Impact Assessment as a major tool to avoid negative developments in important or potentially important habitats of snow leopard and its prey species (Custodian line Depts., MoE, Provincial WLD, Line Depts.);
- Include the snow leopard conservation in plans that address development issues in places, which are important snow leopard habitats too (Provincial Planning and Development Dept., Provincial Wildlife Depts., relevant organizations).

Problem: Loss of natural food (prey species) of snow leopard results in enhanced predation on livestock

Reasons

- Uncontrolled hunting of important prey species has reduced their populations
- Excessive and uncontrolled grazing by livestock has reduced both the quantity and quality of food for the prey species, thus adversely affecting their reproductive capacity and simultaneously increasing their susceptibility to various diseases if they share their habitats with domestic livestock

Proposed Actions

- Control illegal hunting of wildlife species, especially in important snow leopard habitats, using management tools such as trophy hunting and other socio-economic incentives for community also, in addition to legal punishment (Provincial Wildlife Depts., MoE, NCCW) ;
- Motivate and support the livestock owners in important prey species habitats to vaccinate their livestock against common diseases, before taken to the pastures; leaving behind the animals that are sluggish or apparently sick, and maintain stock that shall not denude the pastures of its flora (WWF P, Veterinary Dept, AKRSP, MCP).
- Support the livestock departments to provide disease control services to livestock in snow leopard habitats shared with human.
- Develop and implement plans that focus on recovery of wildlife species in habitats where their populations have gone down (Provincial Wildlife Depts., MoE, NCCW, WWF P, IUCN).

Problem: Existing protected areas are insufficient both in numbers and sizes to provide adequate refuge and food to snow leopard

Reasons

- Government land in the snow leopard habitat is not enough to meet the requirements of creating viable protected areas network for snow leopard, or create corridors between the existing protected areas;

- Since in private ownership, extension of boundaries of existing protected areas to cover the entire snow leopard habitats is normally resisted by the local community;
- Disputes, inter departmental and with communities, in demarcation of protected area boundaries in the snow leopard range exist that affects conservation of natural resources in general and wide ranging wildlife species such as snow leopard in particular;
- Government institutions have insufficient capacity to properly manage the existing protected areas in the snow leopard habitat.

Proposed Actions

- Assess the existing protected areas, that support snow leopard populations, for their validity and effectiveness in the context of the requirements of snow leopards for space and food (NCCW);
- Propose extension in boundaries of protected areas, where needed, in consultation and agreement with, and co-operation of the local communities so that their rights of uses or ownership are not affected against their will and consent; and that community accepts to be the custodian of snow leopards in the extended zone (NCCW, Provincial Wildlife Depts., MoE);
- Arrange special trainings and courses for relevant staff to build their capacity for managing the existing protected areas and create new ones, as and when needed (Pakistan Forest Institute/MoE, Provincial Wildlife Depts., WWF P, IUCN).
- Conduct feasibility of creating snow leopard sanctuaries in the snow leopard habitats in NWFP, Northern Areas, and Azad

Jammu and Kashmir (Provincial Wildlife Depts., NCCW, MoE)

Problem: Lack of appropriate management of snow leopard populations is lacking in the Tran boundary areas

Reasons

- The countries sharing snow leopard habitats with Pakistan, such as China, India and Afghanistan, have little or no understanding at Government levels on the need for co-management of such habitats;
- In case of Pakistan and China, there are two protected areas, one each on either side of the Pak-China border but with no agreed system of joint management or sharing information on snow leopard and its prey species between scientists and researchers;
- Although it is possible that snow leopards may move in, and out of its habitats in Pakistan, it was confirmed only recently that a snow leopard, found in Chitral Gol National Park and Toshi Game Reserve, does spend a part of its time across the border in Afghanistan. It has been recorded about 30km inside the Afghan border. However, it is still not known if it is equally safe in its Afghan habitat? Without such information and needful protective measures on part of both countries, the chances for survival of the snow leopards across the shared habitats shall remain unsatisfactory;
- Lack of coordination between the conservation agencies of the adjoining countries doesn't allow successful lessons, even if

available as a result of various conservation interventions, to be shared for replication in habitats across the borders;

- Political conflicts and regional disputes among the adjoining countries doesn't allow the relevant agencies to negotiate issues and use joint wisdom to address the wildlife conservation issues in the trans-boundary areas, specifically in relation to snow leopard.

Proposed Actions

- Document the current status of issues and problems of snow leopards by undertaking socio-ecological studies in habitats close to neighboring countries and determine need for any collaboration with neighboring countries to resolve crucial conservation issues (WWF P, ISLT, WCS);
- Encourage and facilitate the relevant institutions/organizations in Pakistan to initiate joint research and information sharing process with their counterparts in neighboring countries, starting with a friendly country, such as China (WWF P, ISLT);
- Encourage international organizations such as International snow leopard Trust and Wildlife Conservation Society to facilitate the protection of Snow Leopard in the trans-boundary habitats till better arrangements are in place (WWF P);

- Identify relevant institutions across the borders and seek their collaboration to develop and implement plans that shall help protect species, migrating to their countries in certain seasons of the year (WWF P, ISLT).

Problem: Lack of awareness and education in snow leopard conservation issues

Reasons

- Lack of appropriate information about snow leopard, its ecological importance and facts about predation and other aspects, so as to develop relevant messages for key target groups;
- Lack of awareness program/activities on the agenda of most of the relevant organizations for those who matter;
- Insufficient institutional support to accommodate the needful awareness programs for the new generation

Proposed action

- Collect information from herders and through field surveys for awareness raising of the concerned communities in general and the herders in particular (Provincial Wildlife Depts., WWF P);
- Develop and implement awareness and communication plans for a wide range of audiences, especially the academic institutions in the snow leopard zone for relevant authorities to support and implement (WWF P, Provincial Wildlife Depts.);
- Involve print and electronic media in awareness raising program (WWF P, IUCN);

- Create awareness centers, preferable one each in NWFP, NAs, and AJK for the education and mass awareness of the general public.

Problem: Lack of joint and coordinated efforts for the conservation of snow leopard, its prey and habitats

Reasons

- Potential partners in snow leopard conservation across the country are not generally known;
- Proper coordination doesn't generally exist to bring partners closer;
- Work in isolation, even if successful, is not publicized and disseminated properly for others to know about it.

Proposed action

- Establish a working group on snow leopard for the registration of individuals/groups/agencies interested in snow leopard conservation; develop a system for holding periodic meetings and arrange for the collection, sharing and dissemination of information (NCCW, MoE);
- Seek support from agencies such as WWF- Pakistan and International snow leopard Trust (ISLT) to provide coordination support till other appropriate arrangements are in place (MoE, NCCW);
- Hold a consultative workshop of the identified partners in all zones (NAs, Chitral, Upper Swat, AJ&K) to share responsibilities

for the conservation of snow leopard (WWF P, IUCN P, ISLT, MoE);

Problem: Weak implementation of the existing rules regarding the protection of snow leopard, its prey species and habitat

Reasons

- Existing rules are not properly implemented because of certain loopholes and weaknesses;
- Staff of the wildlife department is not enough to effectively cover the entire snow leopard zone;
- Community is not motivated, trained and sufficiently involved to play an effective supervisory role especially in places where staff of the Wildlife Department is not available or difficult for them to access;
- The judiciary is either unaware of the importance of snow leopard or take it a low priority that doesn't allow effective enforcement of law regarding snow leopard.

Proposed action

- Strengthen the network of community reserves/community managed conservation areas, and expand to important sites of snow leopard occurrence (Provincial Wildlife Depts.);
- Assess the possibility of posting community watchers as source of sustainable economic and social incentives for the community and try in places where other programs are not in place (Provincial Wildlife Depts., WWF P, ISLT);

- Publicize and update the existing rules (Provincial Wildlife Depts.).

Problem: Lack of capacity of relevant Government & non-Government Agencies and CBOs to collect needful information on snow leopard

Reasons

- There is no regular program that could provide needful training to interested groups or individuals on issues related to snow leopard conservation, depredation issues or possible incentive packages;
- Resources are either insufficient or non-existent with some of the potential recipient organizations/individuals to pay for their training;
- Availability of funding to support trainees for their travel, boarding and lodging under a regular training program is lacking even if capacity to provide such training exists with certain agencies/organizations.

Proposed action

- Identify and assign responsibility in the short term, to relevant organizations that have the capacity of providing needful trainings in the required disciplines (WWF P);
- Develop a long term funding proposal (5-10 years) to cover the costs involved in such training in the future (WWF P, MoE, ISLT, SLC).

Problem: Lack of information on crucial aspects of snow leopard management/conservation/Scientific Research

Reasons

- Research institutions and universities, having the potential to undertake research on snow leopard and related issues, have normally no resources to do so;
- Students from local and foreign universities are not aware of the available research opportunities on snow leopard in Pakistan;
- There is no national program that provides research grants to students/researchers interested in research on snow leopard and related issues.

Proposed action

- Identify, through consensus of other stake holders, various research areas crucial to the survival of snow leopard from socio-economic perspectives and agree on a mechanism whereby support could be extended to various research organizations and individual researchers and students to work on the agreed topics (WWF Pakistan; Karakorum, Hazara, and Malakand Universities; MoE, HEC);

- Circulate and publicize various research areas, for encouraging local and foreign students and researchers to undertake the needful studies through the support available from different source (WWF P, KU, HU, MU);
- Provide information on possible sources of funding to interested researchers when known or available (WWF, ISLT);
- Introduce a course on snow leopard and its mountain ecosystem in the Karakorum, Hazara and Malakand Universities for graduate and post graduate students to develop their understanding of the species and its conservation needs through class room lectures and field research/visits (WWF P, ISLT, KU, HU, MU).

Implementation mechanism

Although the strategic document may be implemented by various organizations or institutions at federal or provincial level or by agencies in private sector within their work system, a meeting in Gilgit, held on 20th April 2001, comprising of key representatives of various institutions, interested in snow leopard conservation, recommended the following mechanism:

1. National Council for the Conservation of Wildlife (NCCW) should act as a coordinating agency, drawing support from WWF Pakistan and other relevant agencies for the implementation of the strategy and obtaining and keeping records and reports for sharing with other interested partners and stakeholders, when they desire so. Pakistan Forest Institute (PFI) could be another potential source.
2. National Council for Conservation of Wildlife (NCCW) may formulate a technical committee to elaborate upon the implementation mechanism further and develop, when needed, a comprehensive action program for the implementation of individual components of the strategy.
3. Each Provincial Wildlife department and relevant institutions in the public and private sectors may implement this strategic plan in accordance with their mandate and broad policy framework, and

may contact NCCW, WWF or the Provincial Wild life Departments, if any help is required in understanding the plan or implementing any conservation related interventions, prescribed by the plan.

4. It is advisable to have a steering committee, comprising of major stakeholders for undertaking needful decisions, included or not included in the plan, and monitoring the implementation process for sharing results and findings with national or international organizations through NCCW

APPENDIX-I: RESPONSIBILITY MATRIX

Sl. #	Problem	Proposed Action	Responsibility	Time period
1.	Retaliatory Killings of snow leopard by livestock owners	Identify depredation hotspots	Provincial Wildlife Depts. WWF Pakistan	2008-2009
		Launch livestock insurance scheme	MoE, ISLT, provincial WLDs, WWF P, IUCN	2009-2011
		Predator control measures	ISLT, WWF P, Local Communities	2009-2010
		EIAs of projects for snow leopard	WWF P, IUCN, MoE	2010
2.	Killing of snow leopard for pelt and body parts	Identify pelt markets, and market chains	WWF Pakistan, ISLT	2008
		Check posts to check smuggling of snow leopard body parts	Provincial WLDs, Local communities	2010
		Reward system in place	MoE, WWF Pakistan	2009
3.	Dying of orphaned snow leopard cubs	Establish provincial SL Rescue teams	Provincial WLDs and ISLT	2008-09
		Train staff of provincial WLDs in rescue and emergency treatment of snow leopard	Provincial WLDs, WWF and ISLT	2009
		Establish a snow leopard resuscitation and release facility	MoE, ISLT, WCS, IUCN	2009-2010
4.	Killing of snow leopard trapped in corrals	Study design of corrals and recommend snow leopard proof design	WWF Pakistan	2008-09
		Build model corrals in snow leopard hotspots	WWF P, Provincial WLDs	2009-10
		Establish snow leopard rehabilitation centre in Pakistan	MoE, ISLT, WCS, IUCN	2009-10
5.	Fragmentation of snow leopard habitat	Snow leopard habitat mapping	WWF Pakistan and NCCW	2009-10

		Identify development projects planned in snow leopard hotspots	WWF Pakistan, IUCN	2009
		EIAs of selected development projects in snow leopard habitat	WWF Pakistan, ISLT	2008-11
6.	Loss of natural food (prey species) of snow leopard	Introduce and strengthen community based watch and ward system in SL hotspots	WWF Pakistan, provincial WLDs	2008-12
		Livestock vaccination and husbandry improvement in snow leopard hotspots	WWF Pakistan, provincial animal husbandry depts., provincial WLDs	2009-12
		Develop recovery plans for key snow leopard prey species	Provincial WLDs, MoE, WWF Pakistan	2008-09
7.	Existing protected areas are insufficient both in numbers and sizes to provide adequate refuge and food to snow leopard	Assessment of validity of existing protected areas network for SL habitat requirements	WWF Pakistan, NCCW	2008-10
		Develop proposal on extension of boundaries of existing protected areas in light of snow leopard requirements	WWF Pakistan, NCCW, Provincial WLDs	2011-12
		Capacity building of provincial wildlife department staff in protected areas management	WWF Pakistan, ISLT	209-10
8.	Appropriate management of snow leopard population is lacking in the transboundary areas	Identify transboundary snow leopard habitats and collaborating institutes	ISLT, WWF P	2008-09
		Initiate joint research and studies in the identified potential transboundary snow leopard areas	ISLT, WWF Pakistan, WCS	2009-2011
		Address snow leopard transboundary issues	ISLT, WWF P, WCS	2009
9.	Lack of awareness	Identify target groups and appropriate	WWF P, Provincial Wildlife	2008-09

		awareness approaches	Dept.	
		Develop and implement awareness raising plans	WWF P, ISLT, MoE, Provincial WLDs	2009-2012
		Involvement of print and electronic medial in snow leopard conservation	WWF P, Provincial WLDs	2009
10.	Lack of joint and coordinated efforts for the conservation of snow leopard, its prey and habitats	Hold a consultative workshop to identify partners in all snow leopard zones	WWF P, MoE, IUCN, ISLT	2009
		Formulate a snow leopard working group	WWF P, MoE	2008
11.	Weak implementation of the existing rules regarding the protection of snow leopard its prey species and habitat	Establish community reserves, and strengthen community based conservation of snow leopard and associated biodiversity	Provincial WLDs, WWF P	2008-12
		Review and amend the existing rules	Provincial WLDs, NCCW	2008-09
12.	Lack of capacity of relevant government and non-government agencies and community-based organizations (CBOs) to collect needful information on snow leopard	Funding proposal on capacity building for snow leopard and associated biodiversity conservation	WWF P, MoE	2009
13	Lack of information on crucial aspects of snow leopard management/conservation/scientific research	Identify research areas, and research institutes to take it up	WWF P, Provincial WLDs, Universities	2009-2010
		Launch students research projects on various themes	WWF P, Provincial WLDs, NCCW	2009-2013