

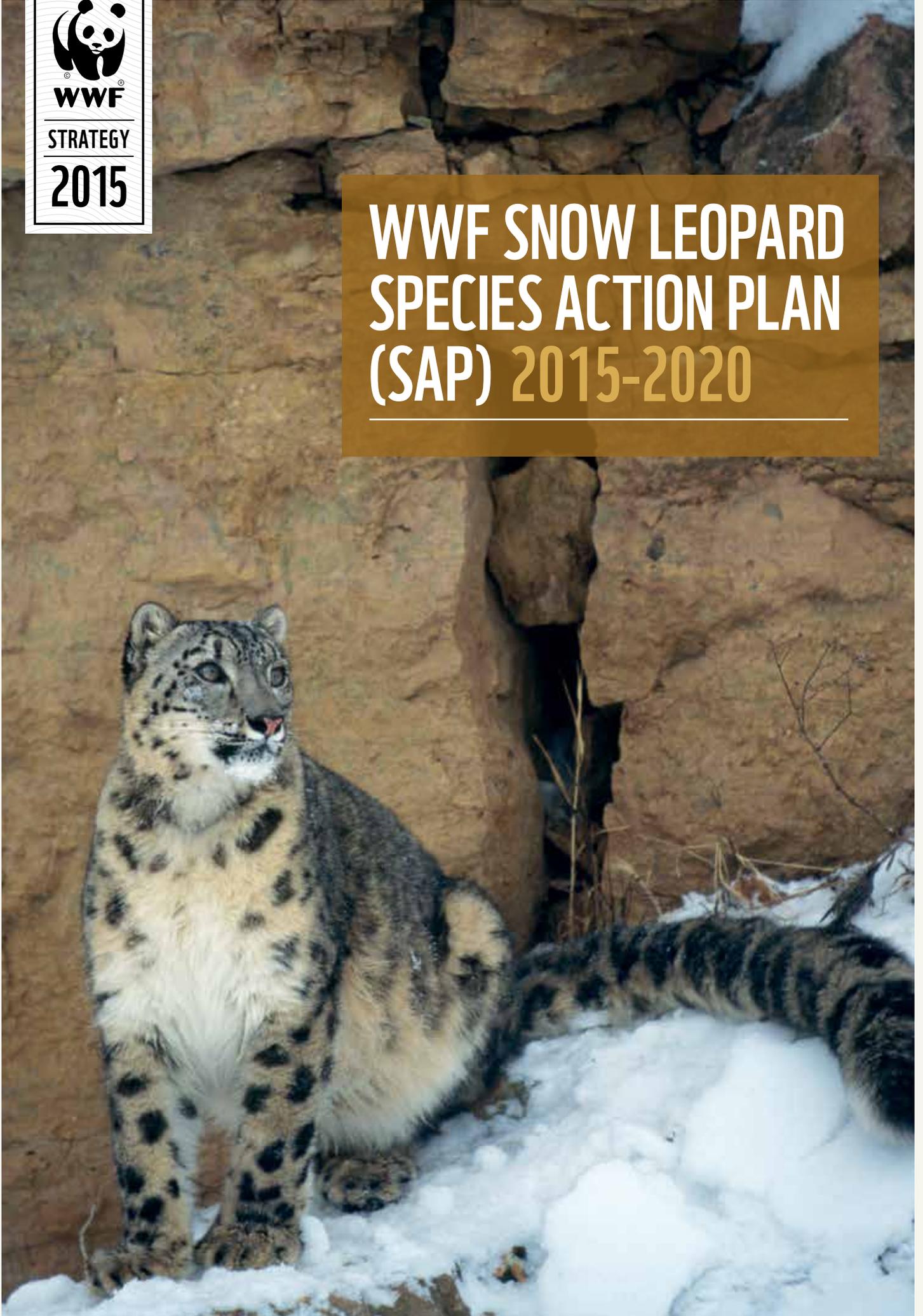


WWF

STRATEGY

2015

WWF SNOW LEOPARD SPECIES ACTION PLAN (SAP) 2015-2020



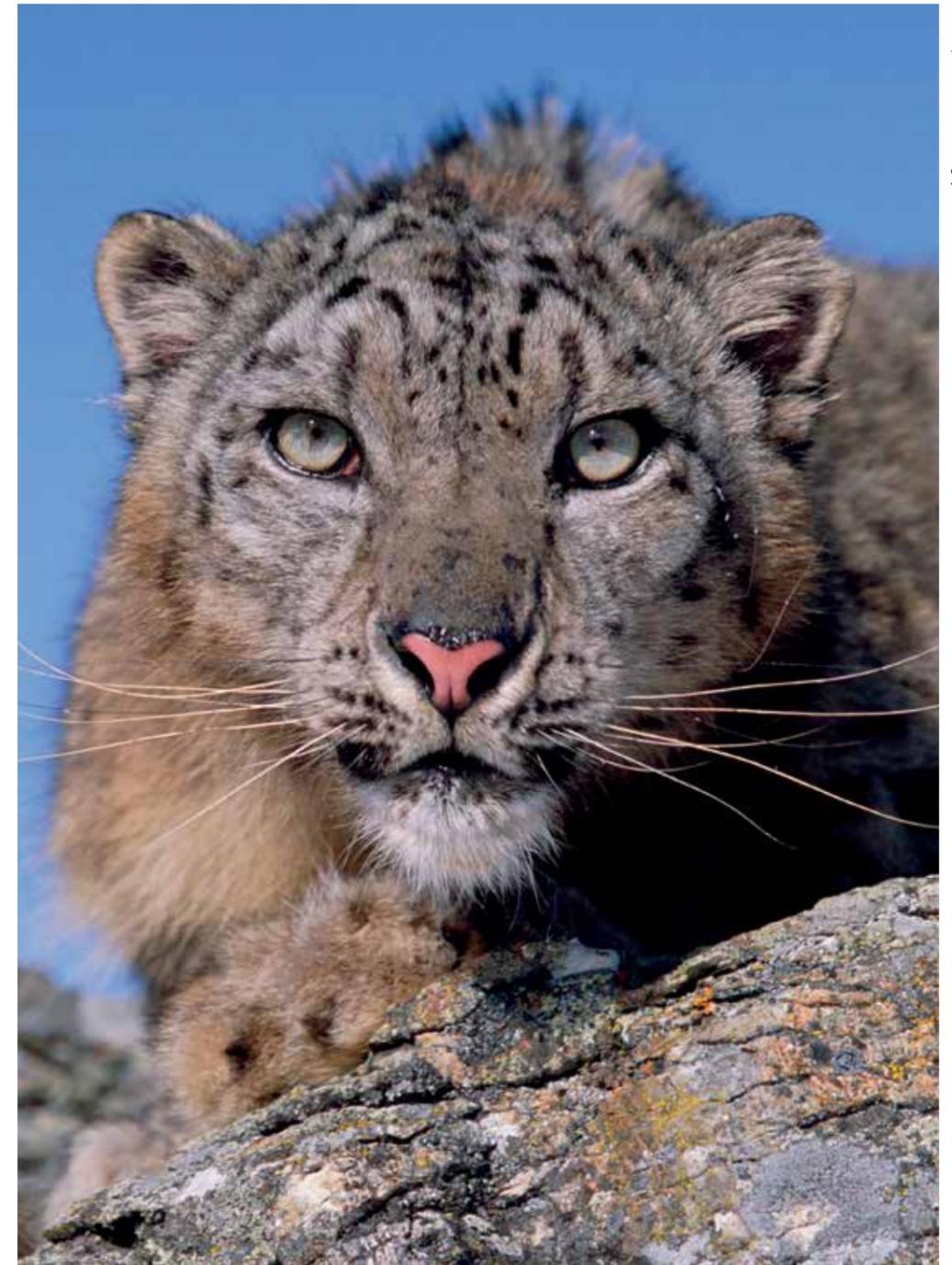
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CONTENTS

Acronyms	5
FOREWORD	7
EXECUTIVE SUMMARY	8
1. BACKGROUND	11
1.1 Summary	11
1.2 Introduction	11
1.3 Snow leopard facts and figures	12
2. SPECIES ACTION PLAN DEVELOPMENT	16
2.1 Background	16
2.2 Threat assessment	17
2.3 Conceptual Model	20
2.4 Stakeholder Analysis	24
2.5 Global niche for WWF and TRAFFIC	24
3. STRATEGIC FRAMEWORK	28
3.1 Vision (2050)	28
3.2 Goal (2020)	28
3.3 Theory of change	28
3.4 Objectives	30
3.5 Actor identification and indicative actions	31
4. THE WWF APPROACH	34
4.1 Global coordination and partnerships	34
4.2 Principles of governance	35
4.3 Operations	36
4.4 Monitoring and Evaluation	36
REFERENCES	39
APPENDIX	41
A SLSS threat assessment	41
B Conceptual model showing current conservation issues for snow leopard	43
C Conceptual model showing conservation issues for snow leopards in the face of a changing climate	44
D Stakeholder analysis	46

ACRONYMS

CBD	Convention on Biological Diversity
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CMS	Convention on Migratory Species
FFI	Flora and Fauna International
GEF	Global Environment Facility
GSLEP	Global Snow Leopard and Ecosystem Protection Program
GTI	Global Tiger Initiative
ICIMOD	International Center for Integrated Mountain Development
INTERPOL	International Criminal Police Organization
IUCN	International Union for Conservation of Nature
NABU	Nature and Biodiversity Conservation Union
NGO	Non-governmental Organization
NP	National Park
NR	Nature Reserve
NTFP	Non-Timber Forest Products
PA	Protected Area
SAP	Species Action Plan
SLC	Snow Leopard Conservancy
SLN	Snow Leopard Network
SLSS	Snow Leopard Survival Strategy
SLT	Snow Leopard Trust
TRAFFIC	The Wildlife Trade Monitoring Network
UNDP	United Nations Development Programme
USAID	United States Agency for International Development
WCS	Wildlife Conservation Society
WildCRU	Oxford University Wildlife Research Unit
WWF	World Wildlife Fund



FOREWORD

Snow leopards have evolved to live in some of the world's highest and harshest environments. But the magnificent ghosts of Central Asia's towering mountains are struggling to survive in the face of ever increasing threats.



Dr Carlos Drews
Director
WWF Global
Species Unit

Snow leopards have carved out a niche as the top predator in the high mountains that span a dozen nations and play a unique role in their ecosystems. They have also become an emblem for watersheds on which tens of millions of people depend. But the health of these landscapes and the future of the extraordinary cats that live in them are being undermined by climate change, overgrazing and human encroachment. Reductions in their prey base and targeted killings also pose significant threats to snow leopards.

The rocky terrain of Central Asia's vast mountains combined with the snow leopard's elusive nature makes it difficult to monitor and successfully implement measures to mitigate the severe threats to this beautiful and endangered species. Numerous organizations have been doing great work over many years to protect them, but all indications are that snow leopard numbers are still declining.

WWF has been supporting snow leopard conservation work for years and has now decided that it is time to scale up our landscape-based efforts into an overarching global approach through a network-wide Species Action Plan (SAP). With as few as 4,000 snow leopards surviving in the wild, there is an urgent need to intensify current conservation efforts. At the same time, there is increasing range state interest in snow leopard conservation as well as an agreed Global Snow Leopard Ecosystem Recovery Program (GSLEP), which was approved at the Bishkek summit in 2013.

This snow leopard SAP defines WWF and TRAFFIC's contribution to the GSLEP, with an emphasis on the species' role as a flagship for climate adaptation in the Central Asian highlands. While our on-the-ground actions in almost every range country will continue to further specific snow leopard projects, WWF will use its global influence and presence in these vital landscapes to help boost overall efforts by our offices, other NGOs and governments to the ecological scale that is needed.

The snow leopard is an icon of Central Asia and a flagship for the high mountains that support numerous species and the livelihoods of vast numbers of people. Governments and conservation organizations have shown their determination to halt the decline in the snow leopard population. This strategy provides the WWF and TRAFFIC networks with the opportunity to contribute in a new and more systematic way to these efforts to conserve the snow leopard and its habitat.

EXECUTIVE SUMMARY

As the iconic symbol of Central Asia's mountains, the snow leopard ranges across 12 countries. From Afghanistan to China, this remarkable species plays a key role as both top predator and an indicator of the health of its high-altitude habitat. If snow leopards thrive so will countless other species, as well as the millions of people whose livelihoods depend on the rivers flowing down from the mountains.

THE SAP COVERS WORK IN 14 WWF PRIORITY LANDSCAPES, WHICH OVERLAP WITH LANDSCAPES LISTED UNDER THE GSLEP



But they are not thriving. Already endangered, snow leopard numbers are dwindling. Habitat loss, degradation and fragmentation are threatening their future as human and livestock populations expand, and as new roads and mines encroach on their remaining range. Declining numbers of prey species, increasing conflict with communities and a rise in poaching are also thinning the big cat's ranks, leaving it clinging on in many areas. Add in the impact of climate change, and it is clear that greater efforts are urgently needed to conserve the snow leopard's habitat and ensure its long-term survival.

For many years, WWF has been working across most of the landscapes that contain snow leopards but has not, until now, had a cohesive and comprehensive strategy guiding its snow leopard conservation activities. This first Species Action Plan (SAP) for snow leopards provides that overarching approach by building upon the organization's long history in snow leopard conservation as well as the projects that WWF offices are currently undertaking in snow leopard range states.

The SAP builds upon the Snow Leopard Survival Strategy produced by the Snow Leopard Network and defines WWF's contribution to the multi-year Global Snow Leopard and Ecosystem Protection Program (GSLEP), which was adopted by the 12 range state governments and other partners at the Bishkek summit in 2013. The SAP identifies WWF's specific niche and ensures that its snow leopard programme will focus on areas where WWF has strong expertise and where WWF's efforts will complement the activities of governments and other organizations, rather than duplicate them.

There are many capable and experienced stakeholders doing superb work on snow leopard conservation, but WWF has a unique role to play at international, regional, landscape and site levels due to its presence in the majority of the 12 range countries, and ability to work at a transnational level. Pursuing this approach will ensure that WWF secures the greatest impact from its investment in snow leopard conservation – and helps enhance global efforts to meet the goals of the GSLEP.

Indeed, the SAP will unite the WWF and TRAFFIC networks behind the goal of achieving “stable and growing snow leopard populations of at least 100 animals conserved with the involvement of local communities in 14 climate-resilient landscapes by 2020” – a direct sub-set of the goal listed under the GSLEP.

The SAP covers work in 14 WWF priority landscapes, which overlap with landscapes listed under the GSLEP. The SAP will focus on five areas where WWF believes its network can add the most value to global efforts to conserve the snow leopard – landscape planning and management to mitigate the threats of macro-economic development and climate change; scaling up successful community-based approaches to snow leopard friendly animal husbandry; addressing poaching through building wildlife management capacity and community engagement; stopping the trafficking of snow leopards and reducing demand for their parts through TRAFFIC; and advocating for the effective implementation of

GSLEP by range states, and maintaining a high level of political support for snow leopard conservation.

A SAP coordinator will oversee implementation and fundraising efforts, as well as work with the Snow Leopard Secretariat in order to achieve the SAP's 2020 objectives:

- 14 snow leopard landscapes have experienced no additional fragmentation and have contracted by no more than 5% of their 2016 size;
- Snow leopard populations across 14 landscapes will be stable or increasing due to improved community stewardship, improved animal husbandry and/or climate-adapted snow leopard friendly livelihoods;
- Levels of poaching in 14 landscapes have been reduced from 2016 levels;
- Trafficking of snow leopards and demand for their products will have been reduced to 50% of 2013 levels; and
- At least 11 snow leopard range state governments have made measurable progress with implementing their commitments in the Bishkek Declaration and the GSLEP.

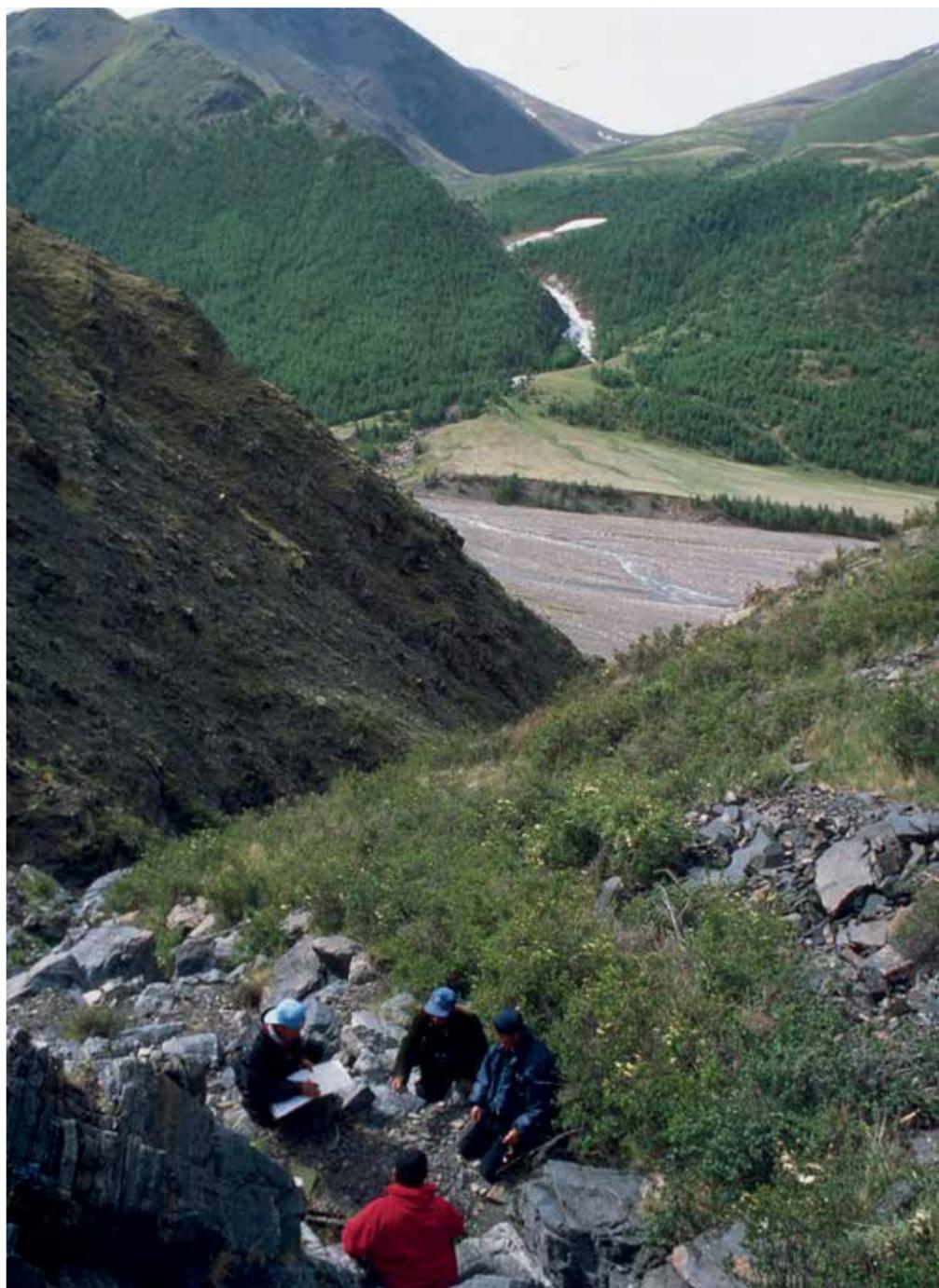
Reversing the downward trend in snow leopard numbers requires conservation efforts on an unparalleled scale. Achieving this will not be easy, but it is more feasible now than ever before thanks to the ongoing work of numerous conservation organizations and the high level commitment of all range states to snow leopard conservation, enshrined in the Bishkek Declaration and the GSLEP.

By focusing on the niche where WWF can have the most impact, the SAP aims to ensure WWF and TRAFFIC best support the work of other organizations and governments, as well as helping to enable conservation interventions to reach the scale needed to safeguard the future of the snow leopard and its habitat.

Snow leopards live in the high mountains of Central Asia stretching from northwestern China to Tibet and the Himalayas.



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WWF team collecting data on Snow leopards (*Panthera uncia*) in the Turgan Mountain Strict Protected Area, Yamaatyn River Valley, Altai Mountains, Mongolia

1. BACKGROUND

1.1 SUMMARY

This Species Action Plan (SAP) for snow leopards has been developed to provide an overarching WWF/TRAFFIC global strategy for the conservation of the species, as well to define WWF and TRAFFIC's unique niche in snow leopard conservation.

The SAP is directly derived from the Global Snow Leopard and Ecosystem Protection Program (GSLEP), which was adopted by all snow leopard range state governments as well as a range of partners. The SAP thus outlines WWF's specific contribution to global snow leopard conservation efforts.



SNOW LEOPARDS ARE DECLINING ACROSS THEIR RANGE DUE TO A WIDE RANGE OF THREATS

The SAP is rooted in and builds upon WWF's long history in snow leopard conservation and the current conservation actions that WWF offices undertake within the snow leopard range states. There are many actors working on snow leopard conservation, but WWF has a unique role to play at various levels due to our presence in the majority of the 12 snow leopard range countries, and ability to work at a transnational level. This SAP ensures that the our snow leopard programme focuses on the areas of work where WWF has strong expertise, and where WWF's contribution can be complementary and synergistic to the efforts of other organizations active on snow leopards, rather than duplicating those efforts. This will ensure we have the biggest impact for our investment.

1.2 INTRODUCTION

Snow leopards are declining across their range due to a wide range of threats. Therefore, it is imperative to address these threats holistically and at a level that can lead to species recovery in a cost effective and strategic manner. Because climate change related impacts are likely to exacerbate many of these threats, incorporating strategies that enable WWF to adapt to working in a changing climate were seen as key to the successful delivery of this strategy.

Currently, there are two global strategies for the species (see below) and central to the SAP's development are the concepts of collaboration, leverage/multiplication and niche. WWF's goal is not to replicate on-going actions, but rather to identify our niche and key collaborations to leverage major conservation impacts for the benefit of snow leopards and the wider conservation community. Since WWF has a significant presence in many of the snow leopard range countries, we can play an important role in covering existing gaps.

The Snow Leopard Survival Strategy (SLSS) is a range-wide conservation strategy produced by the Snow Leopard Network – a collaboration of over 500 individuals working on snow leopard conservation. The SLSS has identified all the threats to snow leopards and contains an incredible wealth of knowledge and local expertise and, as such, the SAP has been developed to build upon and support the SLSS.

The Global Snow Leopard and Ecosystem Protection Program (GSLEP) is a multi-year plan initiated at the Global Snow Leopard Conservation Forum in Bishkek, Kyrgyz Republic, on 22-23 October 2013. It outlines urgent actions and a new global strategy to conserve snow leopards and their habitat across high Asia. The GSLEP is the implementation guidance document for the Bishkek Declaration on the Conservation of Snow Leopards signed by representatives of the 12 snow leopard range states at the Forum. It is the agreed inter-governmental plan to conserve snow leopards and manage their habitat, and the SAP outlines what, how and where WWF can contribute to this global plan.

The WWF snow leopard SAP has been developed following the guidelines under the WWF Program Management Standards for Ecoregions and Large Programs (2007).

1.3 SNOW LEOPARD FACTS AND FIGURES

Life history:

Snow leopards (*Panthera uncia*) are large felids – adult males weigh between 45–55 kg and females between 35–40 kg (Hemmer 1972). They are adapted to living in cold, mountainous environments, and are specially adapted to rocky terrain at high altitudes. Their physical adaptations include thick grey to yellowish tan fur with grey or black rosette patterns that help them blend in to their environment and a long, thick tail that can be 75-90% of the length of their bodies and that provides both warmth during the cold months and balance to negotiate the craggy, steep terrain that is their preferred habitat (Sunquist and Sunquist 2002). However, recent research shows that snow leopards have no special physiological adaptations to survive in a low oxygen environment (Janecka et al. 2015), which could affect their survival given the backdrop of global warming and climate change.

Eking out a living in harsh terrain means that snow leopards are opportunistic predators. They prey mainly on ibex (*Capra sibirica*) and blue sheep (*Pseudois nayaur*), but will kill other ungulates such as argali (*Ovis ammon*), markhor (*Capra falconeri*), Himalayan tahr (*Hemitragus jemlahicus*), urial sheep (*Ovis orientalis*), red deer (*Cervus elaphus*), roe deer (*Capreolus pygargus*), and musk deer (*Moschus spp.*) (GSLEP 2013). In addition, they prey on smaller mammals like marmots and large rodents to supplement their diet, and also feed on livestock whenever they have the opportunity. Along with being powerful and agile climbers, snow leopards are capable of taking down prey three times their size using their long tails for balance when stalking and ambushing a potential meal. A snow leopard may kill every 10-15 days (Jackson and Ahlborn 1984; Jackson 1996), and an adult's annual prey needs include the equivalent of 20-30 sheep (Sunquist and Sunquist 2002). However, recent studies based on radio-telemetry show that a snow leopard kills an ungulate every 8 days on average and thus total prey requirements for the snow leopard population might be far higher than earlier estimates (Johansson, Ö et al. 2015).

Behaviour:

Snow leopards are solitary in nature. Because they are shy and elusive, not much is known about their behaviour. Their movements are often largely dictated by human presence in their range, either due to avoidance of people or attraction to livestock, particularly during the winter months. Mostly active at dusk and dawn, their daytime activity levels may increase in areas where there are very few people (McCarthy, Fuller & Munkhtsog 2005; Wolf & Ale 2009). An individual snow leopard can have a home range of a few hundred square kilometres, and ranges mix when a breeding male's territory overlaps those of a number of breeding females (Sunquist and Sunquist 2002). Snow leopards tend to mark their territories with scrapings, urine sprays and faeces, which they use to locate each other, especially during breeding season (Ahlborn and Jackson 1988). Breeding occurs between January and mid-March, and females give birth to litters of 1-5 cubs from February to September (Ahlborn and Jackson 1988).

Population status:

The snow leopard is listed as endangered on IUCN's Red List (IUCN 2008) and, according to the IUCN Red List assessment (IUCN 2008), the population of the cat is declining. The total estimated population is 3,920 to 6,390 individuals (GSLEP 2013 – see Table 1) although many of the estimates are acknowledged to be crude and outdated. The global effective population size comprising breeding adults is considered to be below 2,500 (IUCN 2008).

Table 1: Estimated area inhabited and population size of snow leopards in the 12 range countries (GSLEP 2013)

Range Country	Estimated Area (km ²)	Estimated Population	Year of Evaluation
Afghanistan	50,000	100-200	2003
Bhutan	15,000	100-200	1994
China	1,100,000	2,000-2,500	2003
India	75,000	200-600	1994
Kazakhstan	50,000	100-110	2001
Kyrgyz Republic	105,000	150-500	2001
Mongolia	101,000	500-1,000	2000
Nepal	30,000	300-500	2009
Pakistan	80,000	200-420	2003
Russia	60,000	70-90	2012
Tajikistan	100,000	180-220	2003
Uzbekistan	10,000	20-50	2003
Total	1,776,000	3,920-6,390	

Distribution:

The snow leopard occurs in the mountains of Central Asia with countries of distribution including Afghanistan, Bhutan, China, India, Kazakhstan, Kyrgyz Republic, Mongolia, Nepal, Pakistan, Russia, Tajikistan and Uzbekistan. The Altai, Tien Shan, Kunlun, Pamir, Hindu Kush, Karakoram and Himalaya ranges make up its habitat (SLSS, 201). The confirmed global distribution of the snow leopard based on the latest range maps is estimated at 1,003,608 km² (McCarthy et al., in prep). An additional 219,489 km² is probable snow leopard habitat that is expected to have snow leopards. Further, there is about 1,535,116 km² of possible snow leopard habitat where surveys are needed to establish the presence of snow leopards.

Range:

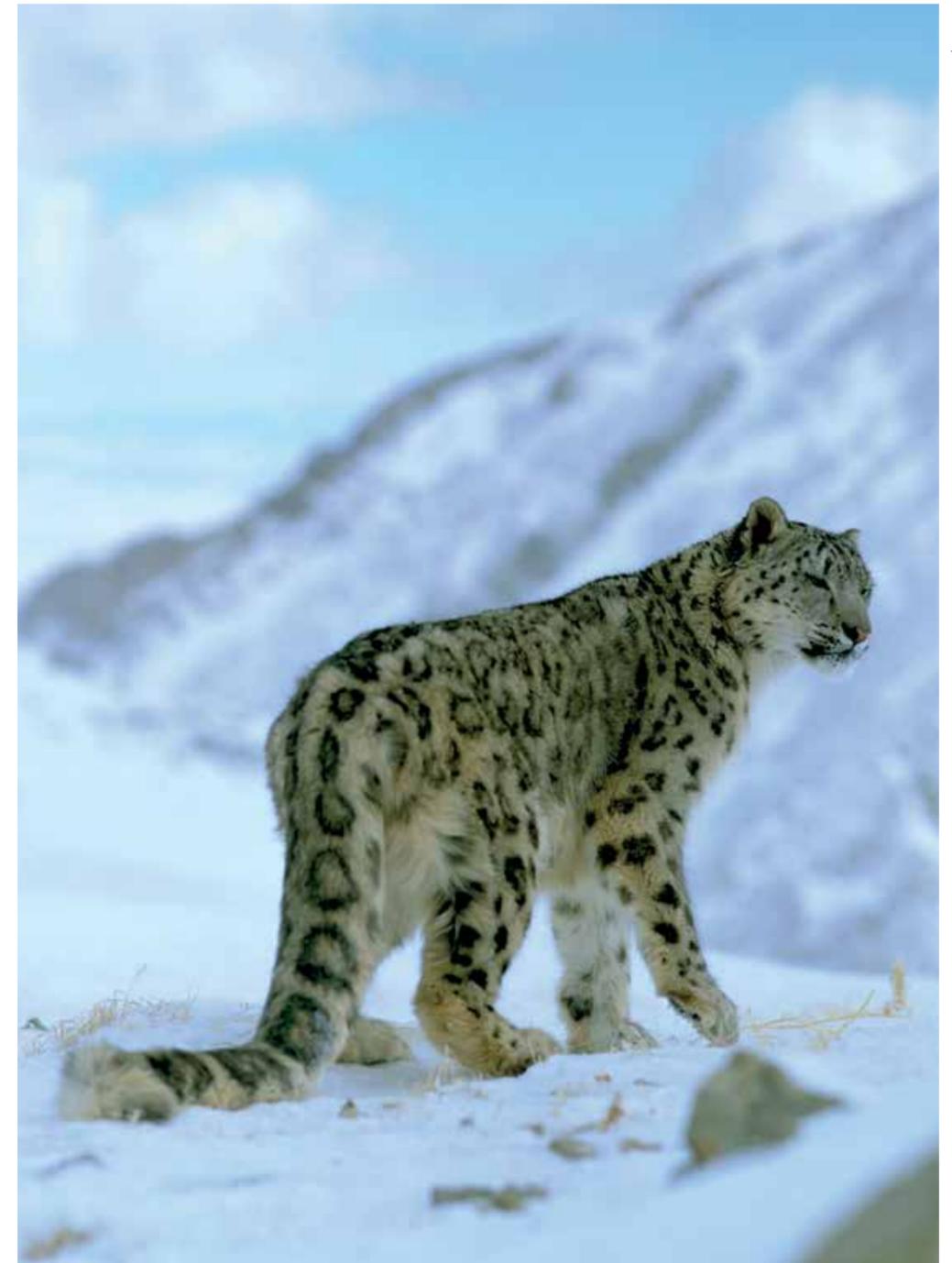
While snow leopards occupy alpine meadows and forests in addition to rocky areas, their altitude preference is between 2,700-5,800m and they are generally found above the tree line (Fox et al. 1991; Ale, Yonzon & Thapa 2007). In Mongolia, they occur at much lower altitudes between 900-2,500m (McCarthy et al. 2000). They may move to lower elevations in some parts of their range in mid-winter following the movements of prey species when snow cover is much deeper at higher elevations. Snow leopards generally prefer harsh, rocky terrain and tend to avoid humans and human-dominated areas depending on the extent of anthropogenic pressure. While habitat areas that they regularly avoid include valleys, open areas and spaces occupied by humans, they do traverse wide distances across such areas to reach their preferred habitat (McCarthy et al. 2010). This is particularly true of young males in search of new hunting territories. Analysis of the impact of climate change on the range of snow leopards, predicts a contraction in suitable habitat and a fragmentation of distribution – both of which could cause a significant contraction in the range of the species (Forrest et al. 2012).

Legal status:

The snow leopard is listed under Appendix I of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) so all international trade for commercial purposes is prohibited. The snow leopard is also listed as a “concerted action species” under the Convention on Migratory Species, and is also protected under the national laws of all 12 range states (GSLEP 2013.)



Figure 1: Snow leopard range (GSLEP 2013)



2. SPECIES ACTION PLAN DEVELOPMENT

2.1 BACKGROUND

This SAP was developed using the WWF Program Management Standards for Ecoregions and Large Programs (2007) and by utilizing Miradi software. The following components of strategic planning were conducted:

- **Detailed threat assessment**

Direct and indirect threats facing snow leopards were identified through the SLSS (see Appendix A), GSLEP, national Snow Leopard Action Plans, the WWF Eastern Himalayas Snow Leopard Strategy, the WWF China Snow Leopard Strategy and in consultation with WWF experts around the network. Direct threats were prioritized by assessing the scope, severity and irreversibility of each threat using Miradi software.

The potential impacts resulting from climate change were seen to be pervasive and compounding to existing threats, so instead of treating climate change as a single threat to be addressed alone, its impact was a key consideration in the assessment of all other threats.

- **Conceptual model development**

The conceptual model was developed in Miradi starting with the direct threats, and following the chain of logic backwards from the indirect threats to the contributing factors that influence indirect threats. In this way, the model illustrated all relevant pressures, drivers and threats, and the causal links between each contributing factor could be mapped and understood. This initial conceptual model (Appendix B) was peer reviewed by WWF experts and adapted accordingly.

This conceptual model was then analysed in the context of climate change (Appendix C). The impacts of climate change – starting from a changing climate and following the logic chain forwards to the direct impact of a changed climate – were incorporated into the impacts of existing contributing factors on snow leopard conservation and how these would change in a climate-impacted environment. These were marked by arrows showing an increase, decrease or unknown impact on the threat. Next human capacity gaps, where no such capacity exists to adapt to a climate-impacted environment, were included. With this mapping completed, we were able to demonstrate the resulting influence of climate change on existing threats to create a comprehensive assessment of the threats facing snow leopards.

- **Stakeholder analysis**

In understanding that there are many organizations working on snow leopard conservation and Asian high mountain ecosystem management, it was important to ensure WWF was not replicating the great work of these organizations, but adding value at all levels. A stakeholder analysis was therefore undertaken to identify what work was already being conducted by others (Appendix D). This was done by mining organizations' websites, through direct engagement with individuals from some organizations, and by mapping activities against the 23 landscapes and 12 range countries identified under the GSLEP process.

- **Strategy development**

Causal chains that covered the most important and impactful strategies were then extracted from the conceptual model. These causal chains were investigated further in relation to implementation strategies designed to address the key causal factors along the chain that we believe will reduce the direct threats to snow leopards. We then looked at these implementation strategies in relation to the stakeholder analysis to identify where WWF had a unique niche, where we were complementary to on-going actions by others, and where we may be replicating actions. The implementation strategies where we felt WWF had an added value were then rolled up, resulting in the SAP objectives and the goal.

2.2 THREAT ASSESSMENT

As noted above, climate change will have a significant impact on snow leopards, but this impact will be pervasive and compounding to existing threats. Therefore, climate change was treated in this threat assessment as an indirect threat that was considered as a key part of the analysis of each direct threat listed below.

The threat assessment revealed that each of the 12 range states had similar overarching direct threats in common:

- **Habitat loss and fragmentation;**
- **Reduction of prey base; and**
- **Killing and removal of snow leopards from the wild.**

Table 2: Ranking of direct threats to snow leopards across their range

Climate change will influence each of these direct threats	Threat	Scope	Severity	Irreversibility	Summary threat rating
	Habitat loss and fragmentation	● Medium	● Medium	● Very High	● HIGH
	Reduction of prey base	● Very High	● High	● High	● HIGH
	Killing and removal of snow leopards from the wild	● Very High	● Very High	● High	● VERY HIGH
	Overall threat ranking	● VERY HIGH			

As seen from the threat assessment in the SLSS (Appendix A), some direct threats are region-specific and some are country-specific. This is key information when developing a range-wide strategy as it can highlight actions that need to be taken at the local level, but also actions that are needed range-wide where WWF coming together as a network could potentially have bigger impact.

WWF HAS A UNIQUE ROLE TO PLAY AT VARIOUS LEVELS DUE TO OUR PRESENCE IN THE MAJORITY OF THE 12 SNOW LEOPARD RANGE COUNTRIES, AND ABILITY TO WORK AT A TRANSNATIONAL LEVEL

PRIMARY INDIRECT THREAT:

Climate change

The impacts of climate change on snow leopards are difficult to predict and likely to be significantly different in different regions (Sindorf 2014). However, it is highly likely that changes in seasonality of precipitation will bring an increased frequency and intensity of droughts along with an increased frequency and intensity of flooding (Sindorf 2014). It is also likely that there will be increased melting of permafrost and glaciers. These impacts will have significant effects on habitat with succession to new species compositions that will likely lead to shifts in the range of snow leopards and their prey, and possibly bring competing predators into snow leopard range, which will have numerous knock-on consequences. These environmental impacts arising from a changed climate will also impact the human environment of high Asia, with increasing water and food insecurity potentially leading to increased poverty and human movement (Sindorf 2014). These could affect livelihood strategies applied across the snow leopard range and so alter the community-focused interventions planned in any strategy.

Such changes are likely to be relatively slow, but fast enough that we need to monitor them now and constantly review the situation so that we can adapt our strategy accordingly and react to the needs of communities, snow leopards and their prey. Due to the pervasive nature of climate impacts across all threats, they have been integrated into how we address snow leopard conservation overall and not separated out as impacts to be addressed alone. Though the SAP attempts to address the impacts of climate change in a manner where they are seen as integrated to the overarching goal of conservation, there exists no doubt that specific monitoring of climate change and its impacts will have to be conducted. This monitoring should be done through social and ethnographic surveys during the initial phase of SAP implementation to understand the impacts of climate change on livelihoods and resultant impacts on snow leopard habitat. Long term climate monitoring should be initiated in all the priority landscapes by collecting fine scale data on temperature, precipitation and other climate sensitive variables. This would help to ensure a better and more accurate prediction of potential changes in snow leopard habitat using species distribution models such as Maxent.

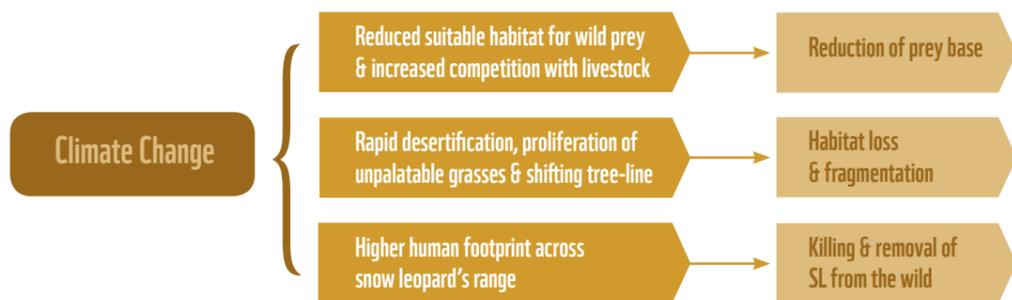


Figure 2: How climate change exacerbates the three main threats to snow leopards.

MAIN DIRECT THREATS:

Habitat loss and fragmentation

Habitat loss in snow leopard territory results from a range of activities, including overgrazing driven by increasing human population densities, infrastructure development, and inadequate impact mitigation of extractive industries and invasive species.

Increasing human population densities and the expansion of static forms of livestock management in regions historically used by nomadic herding communities are changing the makeup of the land and altering traditional rotational grazing practices: the result is both a reduction of habitat for natural prey species and degradation of that habitat. The growth of more static forms of livestock management also leads to the establishment of permanent settlements, largely driven by pasture privatization, that are more impactful on the land than traditional nomadic lifestyles, resulting in further habitat loss and degradation.

Habitat degradation and the resulting changes in species composition can lead to the spread of invasive species, both plant and animal, which impact the habitat and consequently snow leopard prey.

Finally, infrastructure development, such as roads and other facilities, within the snow leopard range makes these habitats more prone to degradation. Greater linear infrastructure also opens up previously remote areas to poachers and other interests, such as mining and other extractive industries that often operate in these areas without proper oversight and impact mitigation.



**SNOW LEOPARD
TRADE DOUBLED
IN THE DECADE
FROM 2003-2012
AS COMPARED TO
THE PRECEDING
DECADE**



Typical snow leopard habitat in India. Snow leopards are found in the upper Himalayas, above the tree line.

© Ashwarya Maheshwari / WWF-India



Killing and removal of snow leopards

Direct killing is a critical threat to snow leopard survival. Key factors that contribute to this threat include poaching for trade and retaliatory killing.

Poaching occurs in response to both the demand for the snow leopard's pelt, which is highly valued in Central Asia and Eastern Europe, and for their body parts and bones used in Traditional Asian Medicine (TRAFFIC 2003). Because many communities that reside in snow leopard range live below the poverty line, the comparatively high income generated by poaching can make it an attractive prospect. Snow leopard trade doubled in the decade from 2003-2012 as compared to the preceding decade 1993-2002 (TRAFFIC 2015 in prep.), which likely indicates that snow leopards are increasingly being targeted for their fur and other body parts. While 260 snow leopards were reportedly used in illegal trade in the ten years preceding 2002, the 2015 TRAFFIC in prep. report suggests close to 500 snow leopards in illegal trade in the following decade.

Retaliatory killings occur when snow leopards attack livestock, and herders retaliate against the leopards. Many herders depend entirely on their livestock for their livelihoods, so losing even a single individual can be a great economic loss. By trapping, shooting or poisoning snow leopards, they are attempting to protect their herds from future attacks. Snow leopards' natural prey base is also on the decline for various reasons and this can drive snow leopards to predate more heavily on livestock, and thus may lead to an increase in retaliatory killing.

Reduction of natural prey base

Natural snow leopard prey species, like blue sheep, ibex and argali are in decline, significantly impacting snow leopard densities. Reasons for the decline include habitat loss, fragmentation and degradation, predation by free ranging dogs, harassment and persecution by people, subsistence hunting for meat, poorly-regulated trophy hunting, disease and poaching for trade.

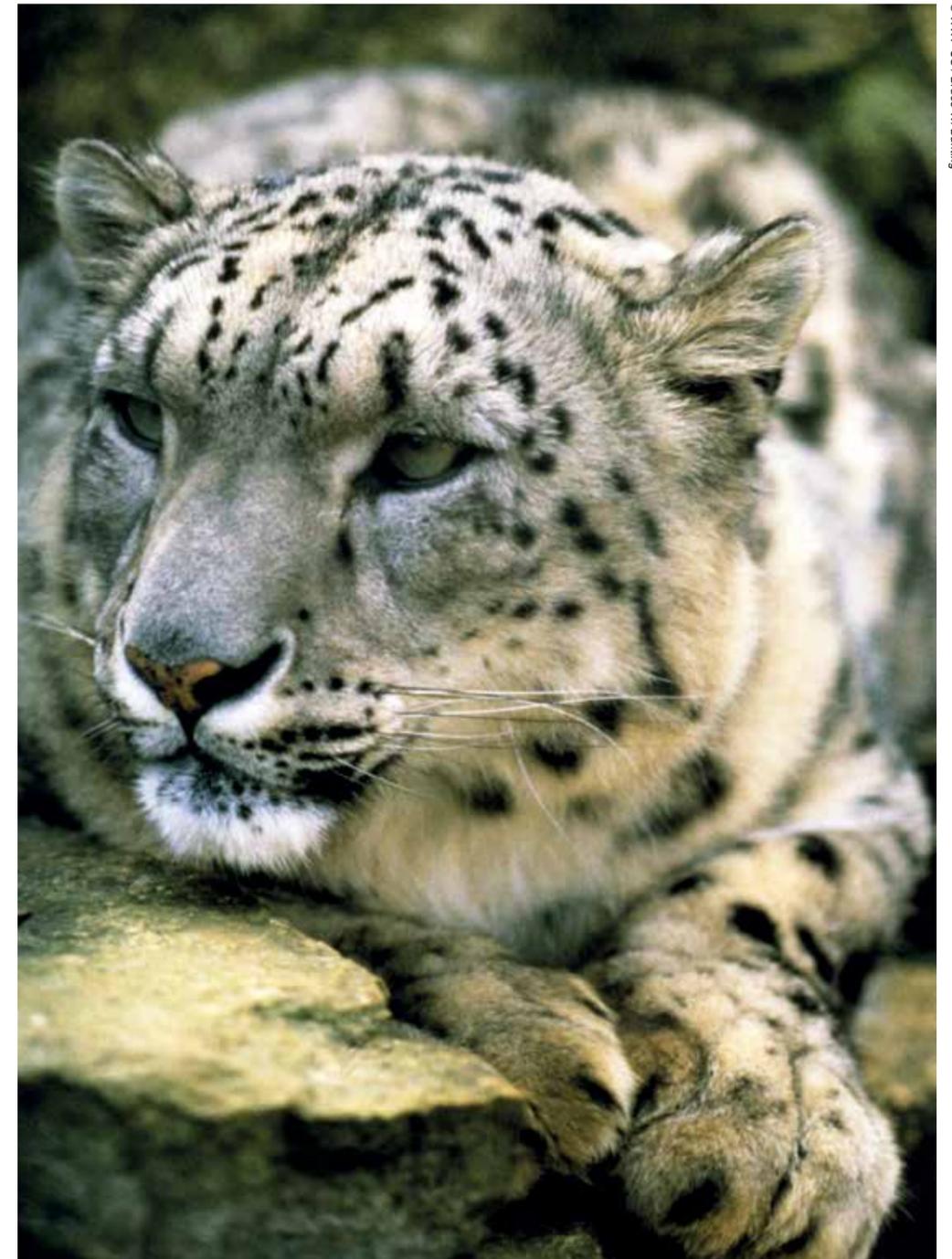
As herding communities grow, they manage larger livestock herds that require more land for grazing or more intensive grazing. This leads to habitat loss and degradation for natural prey species, and can also lead to habitat fragmentation, disrupting access to food for the snow leopard's natural prey species. Livestock herds, especially cashmere goats, overgraze many areas, leaving little or no food for blue sheep, ibex and other native ungulates.

Snow leopard prey species can be harassed and persecuted by herding communities that see them as competing for the same resources necessary for their livestock. In addition, local communities hunt these species for subsistence, and some poach them for trade. There is also a fairly well-regulated trophy hunting market for these prey species in some places, but in others it is less well managed, with the latter contributing to species decline in some locations.

Finally, diseases transmitted to these ungulates from livestock species, dogs and other domestic animals are also taking a toll on populations.

2.3 CONCEPTUAL MODEL

To further understand these threats, it is important to delve deeper into the drivers and pressures that lead to them. The conceptual model outlines the direct and indirect threats to snow leopards and the drivers and pressures that ultimately power changes to the system. Both categories are broken down below using some examples from the conceptual model:



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TO FURTHER UNDERSTAND THESE THREATS, IT IS IMPORTANT TO DELVE DEEPER INTO THE DRIVERS AND PRESSURES THAT LEAD TO THEM

Drivers: Demand for snow leopard products and lack of anti-trafficking capacity may be reasons driving the poaching of snow leopards and prey; lack of wildlife management capacity may lead to lack of resources for anti-poaching and the inability to control overgrazing by domestic livestock; lack of community resources (poverty) and increasing livestock herds may lead to poor animal husbandry, reduction of rotational grazing and invasive species.

Pressures: Poorly planned economic development in snow leopard range countries may lead to increasing habitat loss and degradation, particularly if climate change considerations and adaptation measure are not part of the planning. Economic development may also increase the demand for snow leopard products (thus increasing poaching), and may increase demand for products such as cashmere (and thus lead to an increase in cashmere goat herding, with resulting impacts on snow leopard habitat and prey); human migration may lead to changing livelihoods that impact habitat and prey species; human population growth may lead to increased permanent settlements and increasing livestock herds; and political instability may lead to weak transboundary collaboration and the rise of illegal trade middlemen.

The final conceptual model is comprehensive, yet complex. A further analysis of the conceptual model, however, shows four distinct pivotal issues that, when their combined impact is mapped, address all the major threats to snow leopards as well as the majority of the causal factors. It is, therefore, a cost effective strategy to focus on these issues. The pivotal issues are listed below (with simplified threat chains for each shown in figures 3-6):

- 1. Macro-economic development:** Infrastructure development, mining and agricultural expansion, etc. leading to impacts felt by both snow leopards and the human communities of high Asia.
- 2. Inappropriate animal husbandry:** As human populations rise, nomadic cultures start to become sedentary and climate change compounds impacts on landscapes, traditional husbandry practices may no longer always be the most sustainable option and could lead to habitat degradation, reductions in the densities and range of wild ungulates and thus increased predation by snow leopards on livestock, leading to retaliatory killings.
- 3. Snow leopard poaching and retaliatory killing:** Poverty, combined with weak local governance and enforcement mechanisms, drives largely uncontrolled poaching and retaliatory killing of snow leopards.
- 4. Trafficking of snow leopards and their parts:** Demand orchestrated by actors within and outside of the snow leopard range largely drives this illegal trade, but it cannot be addressed locally alone.

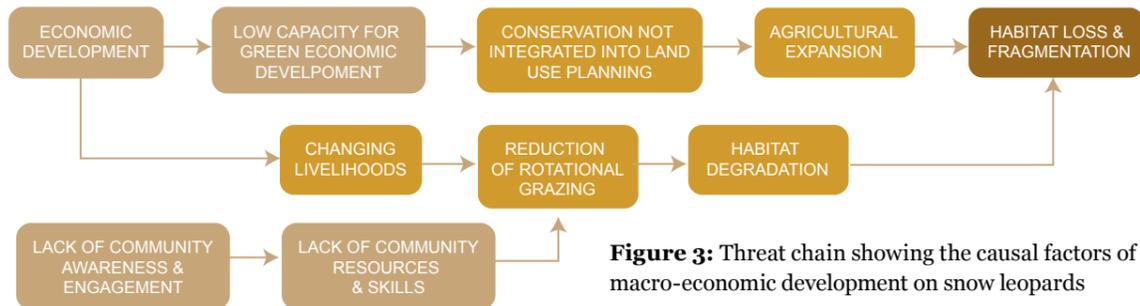


Figure 3: Threat chain showing the causal factors of macro-economic development on snow leopards

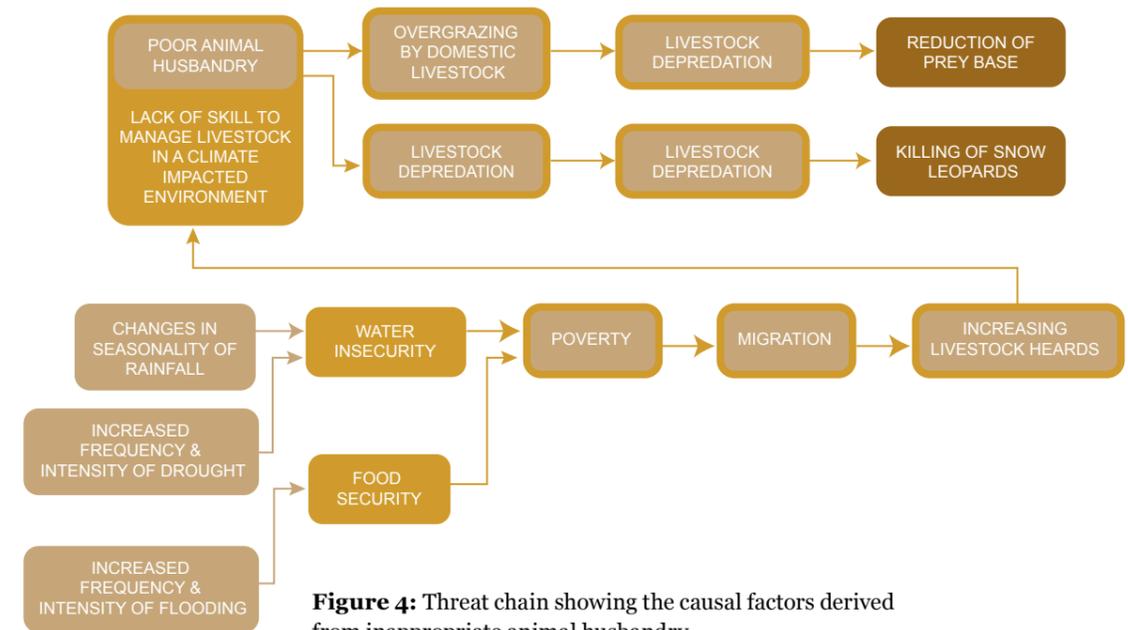


Figure 4: Threat chain showing the causal factors derived from inappropriate animal husbandry

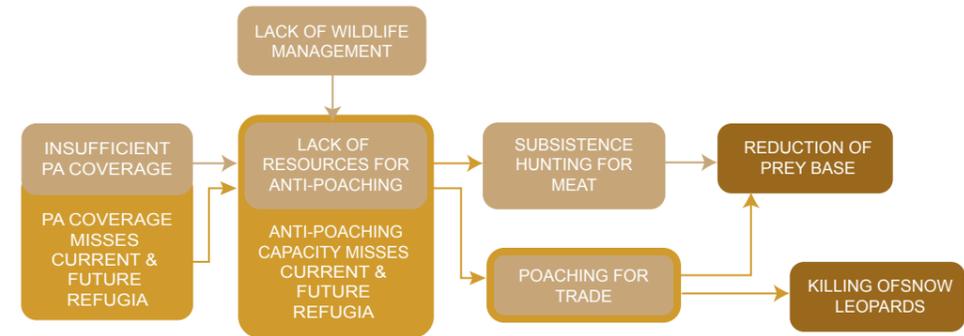


Figure 5: Threat chain showing the causal factors of snow leopard poaching and retaliatory killing

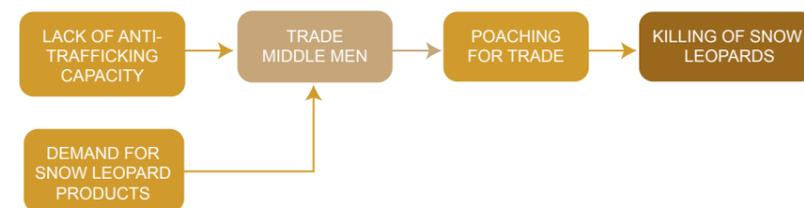


Figure 6: Threat chain showing the causal factors of the trafficking of snow leopards and their parts

2.4 STAKEHOLDER ANALYSIS

We identified the activities of 18 major organizations working on snow leopard conservation and high mountain ecosystem management (Appendix D). We recognize that numerous other organizations are involved, but we did not include organizations only involved in actions within individual countries or sites.

A few organizations have very specific niches, such as INTERPOL's work on snow leopard trafficking and ICIMOD's work on high Asia ecosystem research. However, most snow leopard and conservation organizations focus on alleviating human-snow leopard conflict, and biological monitoring and research. SLT, SLC and Panthera work on livestock insurance schemes, SLT and Panthera have done work on livestock vaccinations, and SLT and SLC work on livestock husbandry improvements and livelihood improvement work. However, similar to WWF's efforts around snow leopards, none of this work has yet been taken successfully to scale. There are clearly major populations of snow leopards that are not covered by any conservation organization and the geographic spread of all organizations together covers only a fraction of the range of the snow leopard.

2.5 GLOBAL NICHE FOR WWF AND TRAFFIC

Based on the stakeholder analysis, WWF has an institutional advantage in the five areas of the conceptual model outlined below, the first four of which build on the four pivotal issues identified in the previous planning stage (see section 2.3):

- **Landscape planning and management to mitigate the threats of macro-economic development and climate change at the landscape level**

No organization appears to have a major focus on the impacts of economic development on high mountain ecosystems and the need for climate-smart ecosystem planning and management. No organization has focused work on the impacts of climate change on snow leopard conservation. Given WWF's expertise in landscape and ecoregion-based conservation, it seems that a key niche for WWF is scaling up proven approaches to the landscape level and integrating conservation management approaches and the impacts of climate change (including adaptation) into landscape planning by governments and communities. WWF will maximize the flagship power of snow leopards as ambassadors for climate adaptation in the high mountains of Central Asia as part of this effort.

- **Scaling up community-based approaches to snow-leopard-friendly animal husbandry to the landscape and policy levels by building on the extensive knowledge of successful models already available**

While WWF will continue with site-based interventions that build on existing bodies of knowledge about what works best, we also have the potential to multiply such site-based efforts by replicating successes at scale, ensuring the benefits extend to larger areas, landscapes and countries. This will be done in collaboration with partners who are also aiming to scale up their efforts, and will be based on an assessment of what has worked and what has not worked in relation to scaling efforts that have been conducted to date.

WWF WILL CONTINUE WITH SITE-BASED INTERVENTIONS, WHILST MULTIPLYING THOSE EFFORTS BY REPLICATING SUCCESSES AT SCALE, EXTENDING BENEFITS TO LARGER LANDSCAPES

STOPPING THE TRAFFICKING OF SNOW LEOPARDS AND REDUCING DEMAND FOR THEIR PARTS THROUGH TRAFFIC



- **Addressing the poaching of snow leopards through building wildlife management capacity and community engagement in snow leopard conservation at scale across landscapes**

WWF has decades of expertise in anti-poaching support, which has in recent years been pulled together into a comprehensive package needed to truly professionalize anti-poaching – the 'zero poaching' framework. Working with range state governments to support them to reach 'zero poaching' is thus a core niche area for WWF.

- **Stopping the trafficking of snow leopards and reducing demand for their parts through TRAFFIC**

Given TRAFFIC's longstanding expertise in addressing illegal trade and demand reduction, there is a clear niche for TRAFFIC in this space, including expanding upon our current partnership with INTERPOL on snow leopard trafficking.

- **Advocating for the effective implementation of GSLEP by range country governments, and maintaining a high level of political support for snow leopard conservation**

Because WWF has a presence in most of the range states and due to our experience in shaping high-level, transnational policies, it would be pertinent for WWF to support the World Bank, SLT and others in the political dialogue around snow leopard conservation with a focus on supporting, in partnership with other organizations, the post Global Snow Leopard Conservation Forum dialogue and ensuring snow leopard range governments fulfil their commitments to implementing the GSLEP. In addition, with its global network WWF is well placed to elevate snow leopards as the global flagship for Asian high mountain ecosystems, as representatives of the incredible biodiversity and critical services these ecosystems provide, as well as the threats they face.

With all of these components, WWF has great potential to scale up interventions to the landscape level and develop range-wide approaches at the policy level. The fact that we have a wider presence across the snow leopard's range than any other snow leopard conservation organization means that WWF is well positioned to catalyze wider, scaled up actions through various mechanisms and stakeholders.

These areas of WWF/TRAFFIC 'niche' are well aligned with the GLSEP objectives as outlined in the following table:

Table 3: WWF and TRAFFIC's niche in snow leopard conservation mapped against the GSLEP objectives		
GSLEP Objective	WWF/TRAFFIC Niche	Notes
Engaging local communities in conservation, including promoting sustainable livelihoods, and addressing human-wildlife conflict	Scaling up community-based approaches to snow-leopard friendly animal husbandry to the landscape and policy levels	This is a very busy space, so WWF needs to be careful not to reinvent the wheel but use our strengths in scaling up approaches
Managing habitat and prey based upon monitoring and evaluation of populations and range areas	Landscape planning and management to mitigate the threats of macro-economic development and climate change	In addition to on-the-ground focus, WWF's niche here is large-scale conservation and climate-smart landscape management
Combatting poaching and illegal trade	Addressing the poaching of snow leopards	A strength of WWF is its 'zero poaching' expertise
	Stopping the trafficking of snow leopards	Core business of TRAFFIC
Transboundary management and enforcement	Landscape planning and management to mitigate the threats of macro-economic development and climate change	WWF's expertise in large-scale conservation, ability to convene at highest government levels and our range-wide presence make this a key activity for WWF
	Stopping the trafficking of snow leopards	Core business of TRAFFIC
Engaging industry	Landscape planning and management to mitigate the threats of macro-economic development and climate change	WWF has significant expertise in industry engagement, although such work will only be conducted where there is an identified 'need' within a landscape, and a clear role for WWF
Building capacity and enhancing conservation policies and institutions	All niche areas above will need to involve building capacity and strengthening institutions	Core business of WWF and TRAFFIC
Research and monitoring	Research focused on large-scale conservation management and the impacts of climate change	WWF should link site-based actions and snow leopard research with large-scale conservation and climate change issues for wider impact
Building awareness	Snow leopard as a global flagship of high Asia	A core capacity of WWF

PRIORITY LANDSCAPES

The GSLEP process has identified 23 priority landscapes. WWF currently works in 14 of these landscapes, and as such these 14 landscapes are the places where WWF is best placed to make an impact.

This SAP therefore focuses WWF's snow leopard work on the 14 landscapes identified below (see table 4 and Figure 7):

Table 4: WWF's priority landscapes for snow leopard conservation mapped against those in the GSLEP			
Country	GSLEP Landscape	Area in km²	WWF Snow Leopard SAP Priority Landscape
Afghanistan	Wakhan National Park	10,951	
Bhutan	Snow Leopard Habitat	12,110	YES
China	Yangchiwan	13,600	YES
	Tuomur	2,376	YES
	Taxkorgan	15,000	YES
India	Hemis-Spiti	29,000	YES
	Nanda Devi - Gangotri	12,000	
	Kanchendzonga-Tawang	5,630	YES
Kazakhstan	Jungar Alatau	16,008	
	Northern Tien Shan	23,426	
Kyrgyz Republic	Sarychat	13,201	YES
Mongolia	Altai	56,000	
	South Gobi	82,000	
	North Altai	72,000	YES
Nepal	Eastern	9,674	YES
	Central Complex	9,258	YES
	Western	10,436	YES
Pakistan	Hindu Kush	10,541	YES
	Pamir	25,498	YES
	Himalaya	4,659	
Russia	Altai	48,000	YES
Tajikistan	Pamir	92,000	
	Multi-National Landscape		
Kyrgyz Republic Tajikistan	Allay - Gisar	30,000	

3. STRATEGIC FRAMEWORK

3.1 VISION (2050)

Snow leopards and the people who live among them thrive in healthy ecosystems that contribute to the prosperity and well being of snow leopard range countries in 14 landscapes across high Asia.

3.2 GOAL (2020)

Stable or growing snow leopard populations of at least 100 breeding age animals are conserved with the involvement of local communities in 14 climate-resilient landscapes by 2020.

This goal is a direct sub-set of that in the GSLEP, which states:

The 12 range countries, with support from interested organizations, to work together to identify and secure 20 snow leopard landscapes across the big cat's range by 2020, where "secure" is defined as:

- contain at least 100 breeding age snow leopards conserved with the involvement of local communities,
- support adequate and secure prey populations, and
- have functional connectivity to other snow leopard landscapes, some of which cross international boundaries.

3.3 THEORY OF CHANGE

Truly delivering impact in the conservation of snow leopards is extremely challenging. An individual snow leopard can have a home range of a few hundred square kilometres, meaning that to effectively conserve a viable population requires a conservation effort at an almost unparalleled scale. Individual site based interventions have been the foundation of most snow leopard conservation efforts, yet they are currently not being conducted at the scale that is required for long term snow leopard viability. Thus the fundamental underpinning theory of change for this SAP is multiplication.

Each objective of this strategy aims to achieve replication at scale, engaging with different stakeholders as part of the replication approach. This would include, for example, encouraging and supporting governments, donors and agencies to develop, resource and implement effective landscape-wide, climate-smart planning and management; encouraging and supporting governments, donors and agencies to adopt at scale successful interventions that prevent conflict, and reduce poaching, trafficking and demand; ensuring WWF and other NGO partners are ready to support the necessary ground work as part of the government roll-out of scaled up measures, etc. This multiplication strategy will require dedicated WWF capacity on policy and advocacy, partnership relations etc.

Achieving conservation at this scale is not easy, but will be more feasible now than ever before. The high level commitment of all range countries to snow leopard conservation, enshrined in the Bishkek Declaration and the GSLEP, provides the ideal foundation for WWF to drive policy changes that will enable conservation interventions to reach the scale needed.

AN INDIVIDUAL SNOW LEOPARD CAN HAVE A HOME RANGE OF A FEW HUNDRED SQUARE KILOMETRES, MEANING THAT TO EFFECTIVELY CONSERVE A VIABLE POPULATION REQUIRES A CONSERVATION EFFORT AT AN ALMOST UNPARALLELED SCALE

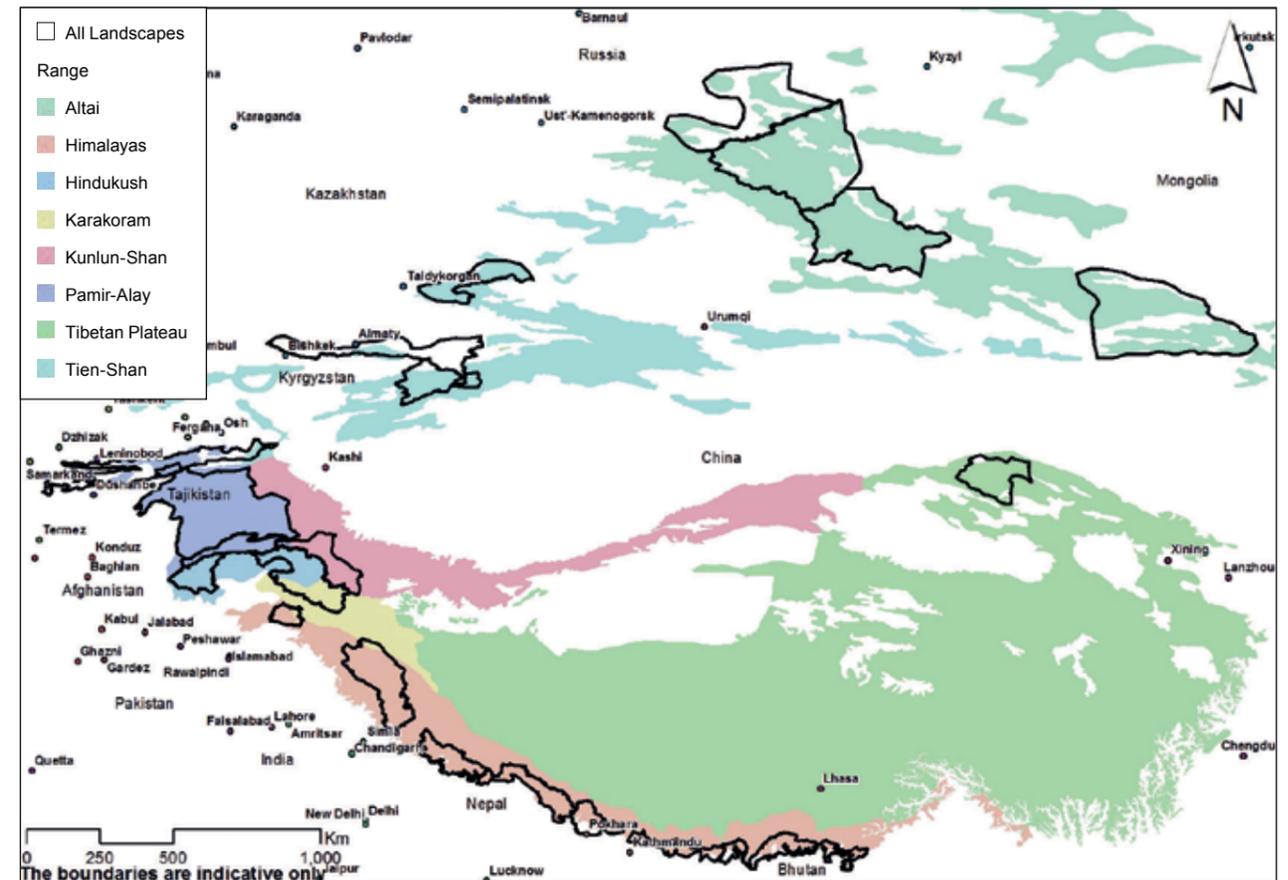


Figure 7: Snow leopard conservation landscapes of the GSLEP (WWF will work in 14 priority landscapes – see Table 4, p23)



© National Geographic Stock / Steve Winter / WWF

Lastly, this strategy focuses specifically on those areas where WWF has a defined ‘niche’ and existing expertise. A global plan for snow leopard conservation (GSLEP) already exists, and has been adopted by governments, NGOs and other stakeholders. This ‘umbrella’ plan makes it much easier for WWF to assess where in the global picture of conservation needs we can best play a role, and which areas we can leave to the capable and experienced snow leopard conservation organizations already on the ground. We will maintain strategic partnerships with relevant stakeholders contributing to GSLEP to ensure continued synergy, while leaving overall leadership of the consortium to the GSLEP Secretariat.

3.4 OBJECTIVES

The SAP outlines what we intend to achieve by 2020 in the following five areas. The first four were identified through the planning process (threat assessment and conceptual model development, section 2) as the pivotal issues that, when their combined impact is mapped, address all the major threats to snow leopards as well as the majority of causal factors. The last area is focused on policy and advocacy and is designed to cement the strategy’s overall theory of change to multiply impact at scale – this is the core of WWF’s contribution to the GSLEP.

Finally, the five areas were revealed as the most appropriate for WWF’s engagement via stakeholder mapping and identification of WWF’s and TRAFFIC’s niche in relation to the umbrella GSLEP i.e. these are the areas of work where WWF and TRAFFIC can best make an impact, and have greatest return on investment:

- Landscape planning and management to mitigate the threats of macro-economic development and climate change;
- Scaling up community-based approaches to snow-leopard friendly animal husbandry to the landscape and policy levels by building on the extensive knowledge of successful models already available;
- Addressing the poaching of snow leopards through building wildlife management capacity and building community engagement in snow leopard conservation;
- Stopping the trafficking of snow leopards and reducing demand for their parts through TRAFFIC; and
- Advocating for the effective implementation of GSLEP by range country governments, and maintaining a high level of political support for snow leopard conservation.

- Objective 1** By 2020, 14 snow leopard landscapes have experienced no additional fragmentation and have contracted by no more than 5% of their 2016 size.
-
- Objective 2** By 2020, snow leopard populations across 14 landscapes will be stable or increasing due to improved community stewardship, improved animal husbandry and/or climate-adapted snow leopard friendly livelihoods.
-
- Objective 3** By 2020, levels of poaching in 14 landscapes have been reduced from 2016 levels.
-
- Objective 4** By 2020, trafficking of snow leopards and demand for their products will have been reduced to 50% of 2013 levels.
-
- Objective 5** By 2020, at least 11 snow leopard range state governments have made measurable progress with implementing their commitments in the Bishkek Declaration and the GSLEP.

The objectives in the SAP are outlined at a high level and are not prescriptive of how various regions/offices undertake their conservation actions toward such objectives. The idea, however, is that collective action designed to deliver on the above objectives will add up to more than the sum of its parts.

3.5 ACTOR IDENTIFICATION AND INDICATIVE ACTIONS

This plan does not go down to the specific activity level in order to leave it up to the country offices and relevant programmes that will deliver on this SAP (e.g. TRAFFIC, Living Himalayas, NOs and POs) to adapt their actions accordingly in light of these objectives. However, a few indicative actions are provided below.

In addition, the key actors that each objective aims to influence, and how we need their behaviour to change, are identified below for each objective. Note that this SAP is only able to do this at a very high level; each country and landscape will be able to be far more specific on the actors they aim to influence.

- Objective 1** By 2020, 14 snow leopards landscapes have experienced no additional fragmentation and have contracted by no more than 5% of their 2016 size.
- Under this objective, we will support snow leopard range countries to develop landscape management plans that are science-based and climate-smart, and support both conservation and economic development; build inter-ministerial support for snow leopard landscape management plans; integrate snow leopard conservation needs into land use planning; work with the relevant government agencies in range countries to engage in wildlife friendly infrastructure development; and adopt clear indicators for monitoring and evaluating conservation actions. We will conduct research into snow leopard biology and movement; research the effects of climate change on snow leopards and their ecosystem; monitor the prevalence of disease in snow leopards and prey species to get ahead of potential epidemics; engage in rangeland management; monitor livestock production; and monitor the spread of invasive species of fauna and flora, as well as other anthropogenic pressures, to assess their impacts on snow leopards, their prey and their habitat.
- Key actors targeted under this objective and how we need their behaviour to change:
- Snow leopard range governments move to improved, landscape-wide climate smart management; and
 - Actors negatively influencing landscapes move to positive or less negative behaviours (note that the specific actors involved will vary between landscapes and could be companies, communities or others).

- Objective 2** By 2020, snow leopard populations across 14 landscapes will be stable or increasing due to improved community stewardship, improved animal husbandry and/or climate-adapted snow leopard friendly livelihoods.
- Under this objective, we will reduce conflict through promoting better grazing practices; encouraging more land to be set aside for natural prey species and for rotational grazing; training communities on the use of snow leopard conflict prevention and mitigation methods; providing communities with incentives like insurance schemes/livelihood incentives to reduce the retaliatory killing of snow leopards; working with communities to develop effective tools to protect livestock from snow leopards; training and engaging local people in snow leopard population and habitat monitoring, especially related to climate change; and building community awareness around the importance of snow leopards to the ecosystem. Most critically, we will engage in advocacy to multiply successful models at landscape wide scale.

Key actors targeted under this objective and how we need their behaviour to change:

- Herding communities adopt snow leopard friendly practices and livelihoods, and halt retaliatory killing; and
- Government departments, such as animal husbandry, veterinary, public works etc. adopt snow leopard friendly practices.

**THIS STRATEGY
WILL FOCUS
SPECIFICALLY ON
THOSE AREAS
WHERE WWF
HAS A DEFINED
'NICHE' AND
EXISTING
EXPERTISE**

Objective 3 By 2020, levels of poaching in 14 landscapes have been reduced from 2016 levels

Under this objective, we will strengthen the capacity of governments and communities to prevent the poaching of snow leopards through removing the permissive environment (conflict prevention, etc.); establishing community information gathering schemes and improving anti-poaching operations; engaging range countries to adopt international protected area management standards and improve trans-boundary cooperation; and building institutionalized capacity in range countries to increase protected area management effectiveness.

Key actors targeted under this objective and how we need their behaviour to change:

- Snow leopard range governments ensure 'gold standard' anti-poaching and protected area management effectiveness; and
- Snow leopard poachers are discouraged from poaching.

Objective 4 By 2020, trafficking of snow leopards and demand for their products will have been reduced to 50% of 2013 levels

Under this objective, we will monitor illegal trade pertaining to snow leopards and natural prey species; build capacity to address wildlife trafficking; expand information sharing amongst countries; enhance trans-boundary enforcement collaboration among countries; track and analyze information on snow leopard traffickers and trafficking routes; and reduce demand in key consumer markets.

Key actors targeted under this objective and how we need their behaviour to change:

- Snow leopard range governments collaborate with each other on effective anti-trafficking methodologies;
- Snow leopard traffickers discouraged from trafficking snow leopard products; and
- Snow leopard product consumers stop purchasing snow leopard products.

Objective 5 By 2020, at least 11 snow leopard range state governments have made measurable progress with implementing their commitments in the Bishkek Declaration and the GSLEP.

Under this objective, we will engage the GSLEP Secretariat and cooperate with it to conduct both international and national advocacy activities to ensure governments implement the commitments they have made to snow leopard conservation through the Bishkek Declaration and GSLEP. National advocacy work will be critical in this effort, but will be supported by working to maintain an international spotlight on these commitments and by internationally showcasing cases where commitments have been successfully implemented. This international component aims to ensure that governments feel the pressure to effectively deliver their commitments, and receive recognition for doing so. As part of this effort, the charismatic power of the snow leopard will be promoted as a symbol of Asian high mountain ecosystems to highlight the importance of conserving these areas for biodiversity and the benefit of the millions of people who depend on the ecosystem services they provide.

Key actors targeted under this objective and how we need their behaviour to change:

- Snow leopard range country governments implement their commitments to snow leopard conservation and effectively conserve Asian high mountain ecosystems for the benefit of biodiversity and people; and
- Global governments and donors recognize the importance of snow leopards and Asian high mountain ecosystems and play their own role in conserving them.

All objectives will have science and monitoring needs embedded into them. Science, monitoring and filling gaps that arise through research is a crosscutting theme that applies to them all.



Snow leopard caught on a camera trap on Munkhkhairkhan Mountain in the Altay-Sayan ecoregion. Experts from WWF Mongolia, in collaboration with Institute of Biology and the Munkhkhairkhan National Park Administration, placed 6 cameras in the area in 2014.

© WWF-Mongolia

4. IMPLEMENTATION FRAMEWORK

4.1 GLOBAL COORDINATION AND PARTNERSHIPS

The overall strategy will be administered and monitored by the snow leopard SAP coordinator. The main roles of the coordinator are:

1. Programme Leadership
2. Programme Coordination
3. Programme Fundraising
4. Programme Monitoring, Supervision and Quality Control
5. Programme Information Management and Communications

The snow leopard SAP coordinator will convene a snow leopard SAP advisory group, composed of support and implementation offices to ensure good coordination and adequate levels of funding. The SAP coordinator will liaise with the Global Species Unit and relevant technical hubs for cross-fertilization of the snow leopard work.

Note: WWF and TRAFFIC currently have a global initiative to combat wildlife crime (the Wildlife Crime Initiative). Snow leopards are not a priority species for that initiative, as it is focused on tackling transnational, organized crime of significant scale. Thus the WCI is not listed as a delivery mechanism for this SAP. However, the WCI is aiming to achieve significant systemic improvements in how governments tackle poaching, trafficking and demand, and is active in many of the snow leopard range and demand countries. Such efforts, if successful, may have positive knock-on benefits for snow leopards themselves.



© Dawa Tsering / WWF-India

A snow leopard education camp run by WWF India.

4.2 PRINCIPLES OF GOVERNANCE

WWF country offices and relevant programmes will incorporate the wider strategies outlined in this SAP into their national snow leopard activities, and will work with the snow leopard SAP coordinator on implementation of these wider strategies.

The SAP summarizes how WWF and TRAFFIC will support the implementation of the GSLEP, and each country office will work in collaboration with the SAP coordinator to support the national processes taking place under the GSLEP. The SAP coordinator will coordinate WWF's inputs to the GSLEP through the Snow Leopard Secretariat.

Following WWF's governance principles, WWF offices in snow leopard range countries will:

- Review opportunities for synergies and optimize new and ongoing collaborations with each other on snow leopard conservation;
- Identify opportunities to amplify impacts on snow leopard conservation;
- Share tasks to build new partnerships and enhance existing ones;
- Identify, optimize and track synergies with other SAPs; and
- Ensure integration into wider landscape/ecoregion programmes.

All WWF offices participating in snow leopard conservation will:

- Work to ensure the uptake of snow leopard conservation priorities by global (e.g. GSLEP), regional (e.g. Eastern Himalayas), national and local governments and stakeholders;
- Assist with drafting, reviewing and evaluating national snow leopard conservation action plans and strategies;
- Provide funding and fundraising support to the implementation of snow leopard conservation priorities;
- Participate in globally-coordinated lobbying and advocacy to support implementation of the snow leopard SAP and delivery on the objectives of the programme;
- Continue to work on the goal and objectives in the snow leopard SAP by supporting field and policy work in field projects and regional programmes;
- Conduct media, advocacy and campaigning activities that will support delivery of the snow leopard SAP;
- Participate in the snow leopard advisory group (to be coordinated by the SAP coordinator) through individuals responsible for conservation plans relevant to the SAP, report on progress, and provide information and data on the monitoring and evaluation of their contribution to the snow leopard SAP; and
- Offer technical support services to the snow leopard SAP coordinator and members of the snow leopard SAP advisory group from all relevant individuals as per their expertise in snow leopard conservation.

4.3 OPERATIONS

The snow leopard SAP will have a dedicated budget for coordination covering the salary of the SAP coordinator, as well as a small support budget for coordination (travel, communications etc). This budget will be part of the overall SAP leadership 'basket'.

Fundraising for snow leopard conservation implementation activities, which will deliver on this SAP, will remain the responsibility of the office and/or programme responsible for those activities, and will continue to be funded directly between support and implementation offices (i.e. funds for implementation of work that delivers on this SAP will not be channelled through the snow leopard SAP coordinator). However, all offices and programmes will keep the snow leopard SAP coordinator informed, and seek the coordinator's input where feasible, on all contracts and funding activities, which deliver on this SAP.

4.4 MONITORING AND EVALUATION

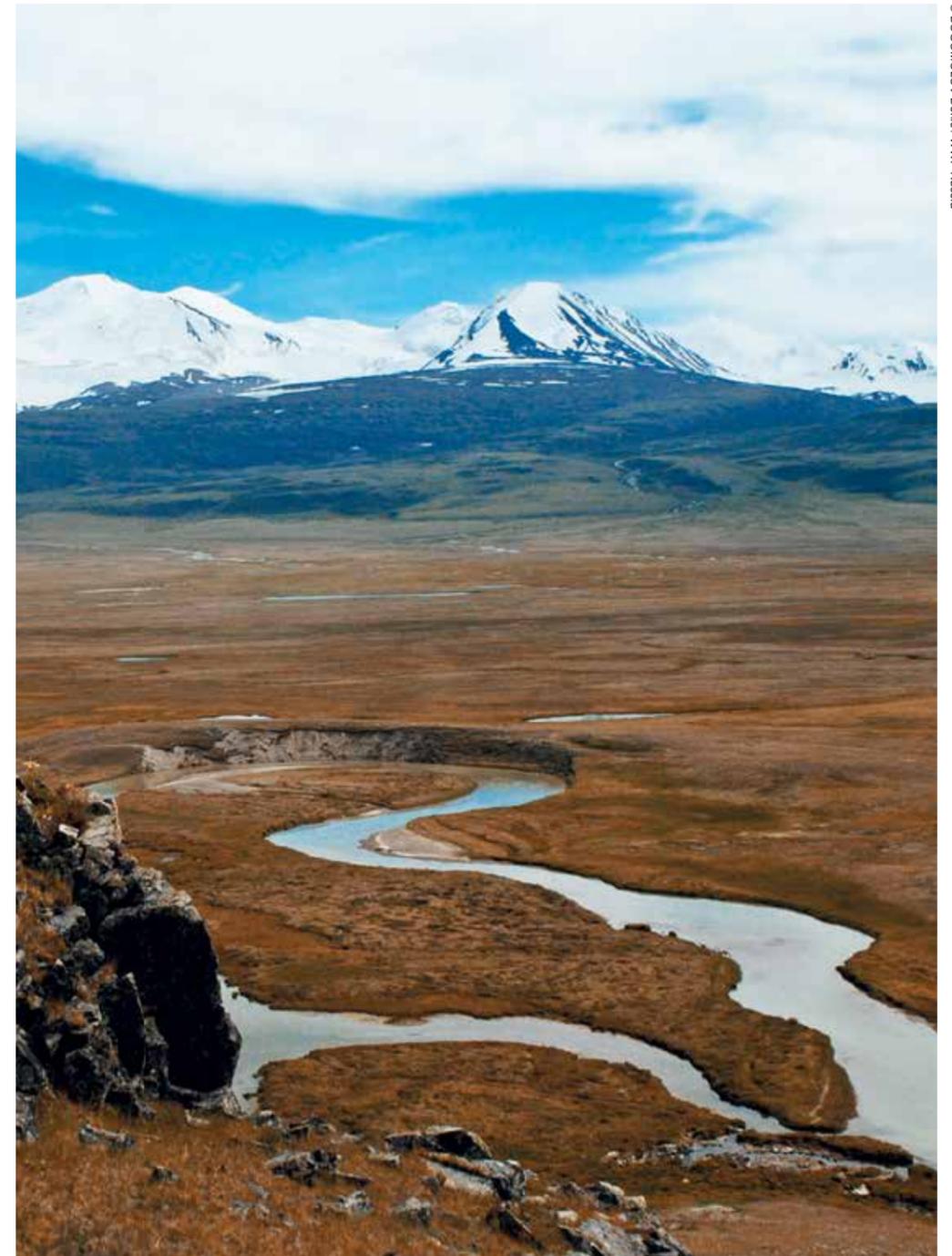
The ultimate indicator of the success of the SAP is the status of snow leopard populations within the 14 WWF priority landscapes, and the extent to which implementation of the GSLEP leads to robust snow leopard populations across the full range of the species (i.e. in the full GSLEP priority landscapes). Rigorous monitoring of impact and performance is likely to demand more resources than those currently available.

Table 6 (23) outlines provisional indicators for monitoring the implementation of the SAP.

The snow leopard SAP coordinator will organize and coordinate the monitoring and evaluation of the SAP in coordination with the range state offices, based on their country and programme specific monitoring and evaluation reports.

In terms of reporting, the SAP coordinator will prepare a bi-annual Technical Progress Report (TPR) on WWF's snow leopard work based on the relevant information already submitted by country and programme TPRs (including TRAFFIC's work where appropriate) for submission to the Global Species Unit, and wider circulation around the network.

The SAP coordinator will draw out key lessons learned from the monitoring and evaluation process on a regular basis, reporting these through TPRs or workshops where applicable, and disseminating them through the advisory group towards adaptive management of the SAP's implementation.



© BOGOMOLOV Denis / WWF-Russia

The Ukok Plateau in Russia is part of the UNESCO World Heritage Site 'Golden Mountains of Altai'. It provides critical habitat for the snow leopard and many other endangered species.

Table 6: Programme indicators		
Objectives	Indicators	Baseline status
<p>Objective 1 By 2020, 14 snow leopard landscapes have experienced no additional fragmentation and have contracted by no more than 5% of their 2016 size</p>	<p><i>Indicator:</i> Size and integrity of landscape</p> <p><i>Means of verification:</i> Satellite imagery combined with some ground truthing</p>	<p>As of 2015, baselines already exist for some landscapes.</p> <p>Baselines will be developed for remaining landscapes in 2016.</p>
<p>Objective 2 By 2020, snow leopard populations across 14 landscapes will be stable or increasing due to improved community stewardship, improved animal husbandry and climate-adapted snow leopard friendly livelihoods</p>	<p><i>Indicator:</i> Number of snow leopards</p> <p><i>Means of verification:</i> Population assessments</p> <p><i>Indicator:</i> Improved community stewardship</p> <p><i>Means of verification:</i> Community surveys</p> <p><i>Indicator:</i> Improved livelihoods</p> <p><i>Means of verification:</i> Community surveys</p>	<p>As of 2015, there are no baselines on snow leopard populations (except a few areas in some of the landscapes), community stewardship and livelihoods.</p> <p>We will develop these baselines, or identify others who may have such information, in 2016.</p>
<p>Objective 3 By 2020, levels of poaching in 14 landscapes have been reduced from 2016 levels</p>	<p>The exact number of poached snow leopards is extremely hard if not impossible to know accurately, therefore the following proxy indicators will be used:</p> <p><i>Indicator:</i> Numbers of snares and traps, number of signs of hunters in landscape</p> <p><i>Means of verification:</i> Community information and patrolling</p>	<p>As of now, baselines are only available from some of the regions in a few landscapes.</p> <p>We will generate these baselines, or identify others who may have such information, in 2016 for all the landscapes.</p>
<p>Objective 4 By 2020, trafficking of snow leopards and demand for their products will have been reduced to 50% of 2013 levels</p>	<p>Demand for snow leopard products will be extremely costly to measure, and there was no baseline in place at the time of writing this SAP. Thus, the levels of snow leopard parts in trade will be used as the main indicator for this objective, and can be considered as a proxy indicator for demand levels:</p> <p><i>Indicator:</i> Number of snow leopards in trade</p> <p><i>Means of verification:</i> Market surveys</p>	<p>Assessment of 2013 trafficking levels available (TRAFFIC report).</p>
<p>Objective 5 By 2020, at least 11 snow leopard range state governments have made measurable progress with implementing their commitments in the Bishkek Declaration and the GSLEP.</p>	<p><i>Indicator:</i> Number of governments which have made measurable progress</p> <p><i>Means of verification:</i> GSLEP Secretariat review of implementation</p>	<p>GSLEP secretariat 2015 review of implementation will be used a baseline (GSLEP conduct six monthly reviews of implementation)</p>

Ale, S.B., Yonzon, P. & Thapa, K. (2007) Recovery of snow leopard *Uncia uncia* in Sagarmatha (Mount Everest) National Park, Nepal. *Oryx*, 41, 89.

Forrest, J., Wikramanayake, E., Shrestha, R., Areendran, Gyeltshen, K., Maheshwari, A., Mazumdar, S., G., Naidoo, R., Thapa, G. J. and Thapa, K., (2012) *Conservation and Climate Change: Assessing the vulnerability of snow leopard Habitat to tree line shift in the Himalaya*. Biological Conservation (150) 129- 135.

Fox, J.L., Sinha, S.P., Chundawat, R.S. & Das, P.K. (1991) Status of the snow leopard *Panthera uncia* in Northwest India. *Biological Conservation*, 55, 283–298.

Global Tiger Initiative Secretariat (2013) *Global Snow Leopard and Ecosystem Protection Program Conference Document for Endorsement*. Print.

Hemmer, Helmut (1972) *Uncia uncia*, Mammalian Species, no. 20, pp. 1–5.

Jackson, R. & Ahlborn, G. (1984) *A preliminary habitat suitability model for the snow leopard, Panthera uncia, in West Nepal*. International Pedigree Book of Snow Leopards, 4, 43 –52.

Jackson, R. and G.G. Ahlborn (1988). *Observation on the ecology of snow leopard (Panthera uncia) in west Nepal*. Pages 65-87. Proceedings of the Fifth International Snow Leopard Symposium. International Snow Leopard Trust and Wildlife Institute of India, Seattle, Washington.

Jackson, R. and D.O. Hunter (1996). *Snow leopard survey and conservation handbook*. International Snow Leopard Trust, Seattle, Washington.

Janecka, J.E., Nielsen, S.S.E., Andersen, S.D., Hoffmann, F.G., Weber, R.E., Anderson, T., Storz, J.F. & Fago, A. (2015) Genetically based low oxygen affinities of felid hemoglobins: lack of biochemical adaptation to high-altitude hypoxia in the snow leopard. *Journal of Experimental Biology*, 218, 2402–2409.

Johansson, Ö., McCarthy, T., Samelius, G., Andrén, H., Tumursukh, L. & Mishra, C. (2015) Snow leopard predation in a livestock dominated landscape in Mongolia. *Biological Conservation*, 184, 251–258

McCarthy, T.M. (2000) Ecology and Conservation of Snow Leopards, Gobi Brown Bears, and Wild Bactrian Camels in Mongolia. PhD thesis. University of Massachusetts.

McCarthy, T.M, Fuller, T. & Munkhtsog, B. (2005) Movements and activities of snow leopards in Southwestern Mongolia. *Biological Conservation*, 124, 527–537.

McCarthy, T, M., Murray, K., Sharma, K. and Johannson, O. (2010). Preliminary results of a long-term study of snow leopards in South Gobi, Mongolia. *Cat News*, 53, 15-18.

Sindorf, N., Forrest, J. and Arakwiye, B. 2014. *Maps of the snow leopard range, water provision, and climate change*. Washington, DC: World Wildlife Fund (WWF). In prep.

Snow Leopard Network (2014). *Snow Leopard Survival Strategy*. Print

Sunquist, Mel, Sunquist, Fiona (2002). *Wild cats of the World*. Chicago: University of Chicago Press. pp. 377 – 394. ISBN 0-226-77999-8.

TRAFFIC (2015). *Monitoring Illegal Trade in Snow Leopards*. *Unpublished data*.

Wickramanayake, E., Shrestha, R. (2011). *WWF Regional Snow Leopard Conservation Strategy for the Eastern Himalayas*. Print.

Wolf, M. & Ale, S.B. (2009) Signs at the top: habitat features influencing snow leopard *Uncia uncia* activity in Sagarmatha National Park, Nepal. *Journal of Mammalogy*, 90, 604–611.

WWF-China (2013). *WWF’s Snow Leopard Conservation Action Plan in China*. Print.

WWF Program Management Standards for Ecoregions and Large Programs (2007). Print.

SLSS threat assessment

Note - Threats table compiled as part of the GSLEP process.

Key to scores: Low threat = 1-5; Medium threat = 6-10; High threat = 11-15

Threat Category & Description	Afghanistan	Bhutan	China	India	Mongolia	Nepal	Pakistan	Russia	Kyrgyzstan	Kazakhstan	Tajikistan	Uzbekistan
Category 1: Habitat & Prey Related												
Habitat Degradation	11	5	6	10	7	9	11	3	9	6	6	11
Habitat Fragmentation	10	2	11	6	8	10	10	0	6	9	0	7
Prey Reduction due to Illegal Hunting	13	5	0	6	11	11	15	11	15	11	14	14
Prey Reduction due to Competition with Livestock	11	8	6	8	14	9	13	7	14	7	12	14
Prey Reduction due to Legal Hunting	0	0	11	0	5	3	3	6	10	9	0	0
Prey Reduction due to Disease	4	5	6	8	6	6	12	0	4	3	7	7
Fencing that Disrupts Movements / Natural Migration	3	0	11	8	3	3	3	0	3	3	6	0
Category 2: Direct Killing or Removal of Snow Leopards												
In Retribution for Livestock Depredation	13	6	10	8	11	12	14	8	6	12	8	8
Poaching for Trade in Hides or Bones	9	6	8	6	6	9	12	10	15	11	11	9
Zoo and Museum Collection of Live Animals	0	0	0	0	0	6	0	0	2	3	3	5
Traditional Hunting of Snow Leopards	0	3	3	0	4	3	0	0	0	6	1	9
Secondary Poisoning and Trapping of Snow Leopards	3	7	6	6	7	9	6	14	9	10	4	0
Diseases of Snow Leopards	1	5	5	8	5	5	11	0	3	3	2	2
Potential threat from legal hunting of snow leopards	0	0	0	0	6	1	5	0	5	0	0	0
Category 3: Policy and awareness issues affecting conservation of snow leopards, prey and habitat												
Lack of Appropriate Policy	13	8	10	10	6	3	9	15	14	3	8	12
Lack of Effective Enforcement	14	5	12	12	13	7	13	15	15	12	12	12
Lack of Trans-boundary Cooperation	9	11	12	8	9	8	9	6	9	7	9	12
Lack of Institutional Capacity	14	10	10	12	12	9	13	12	12	3	10	12
Lack of Awareness Among Local People	8	9	9	12	14	10	13	12	13	10	8	12
Lack of Awareness Among Policy Makers	14	10	10	12	12	3	11	9	13	3	12	12



WWF India field team observing Tibetan argali using a spotting scope as part of a snow leopard population survey in Sikkem.

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Continued

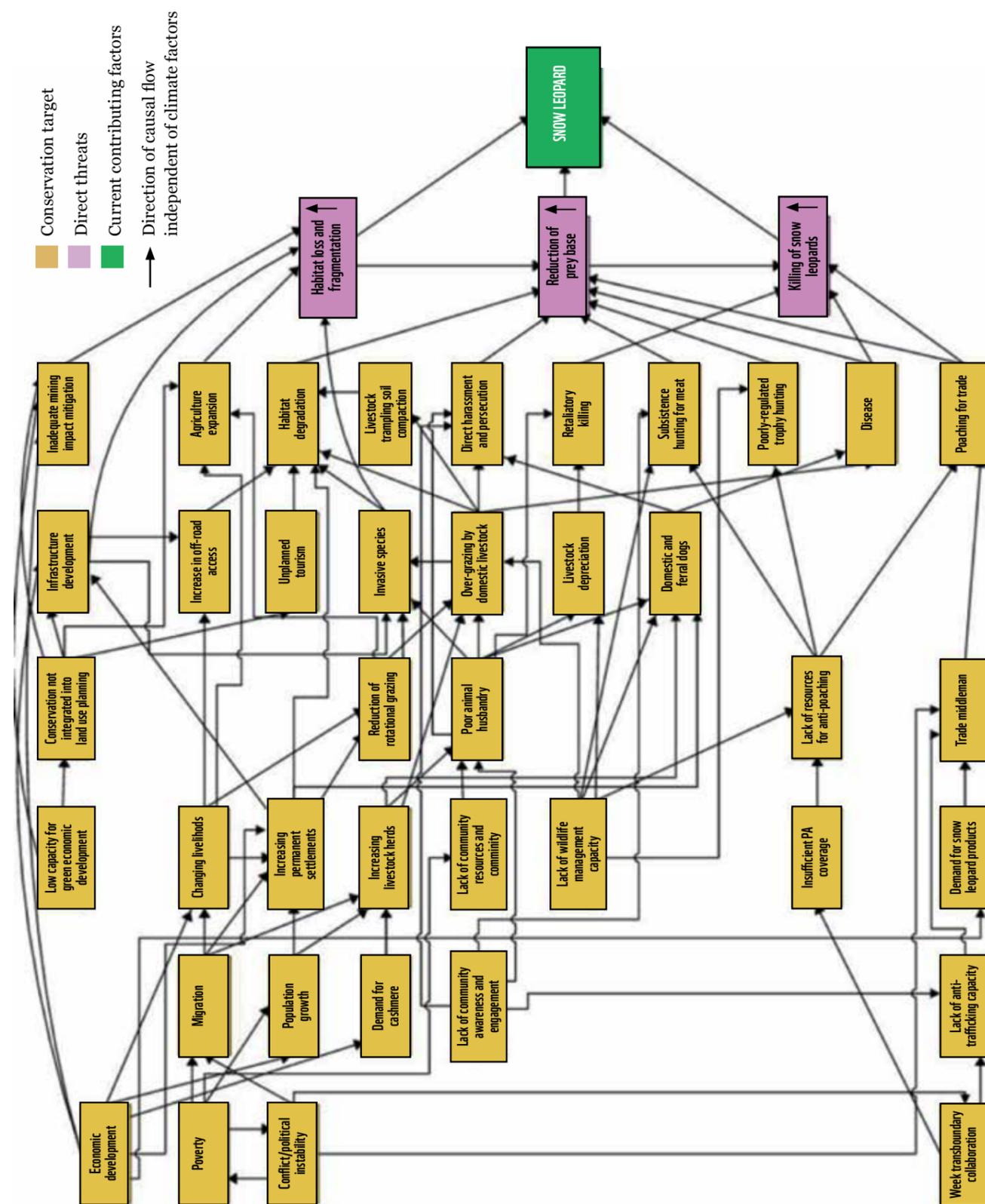
SLSS threat assessment

Note - Threats table compiled as part of the GSLEP process.

Key to scores: Low threat = 1-5; Medium threat = 6-10; High threat = 11-15

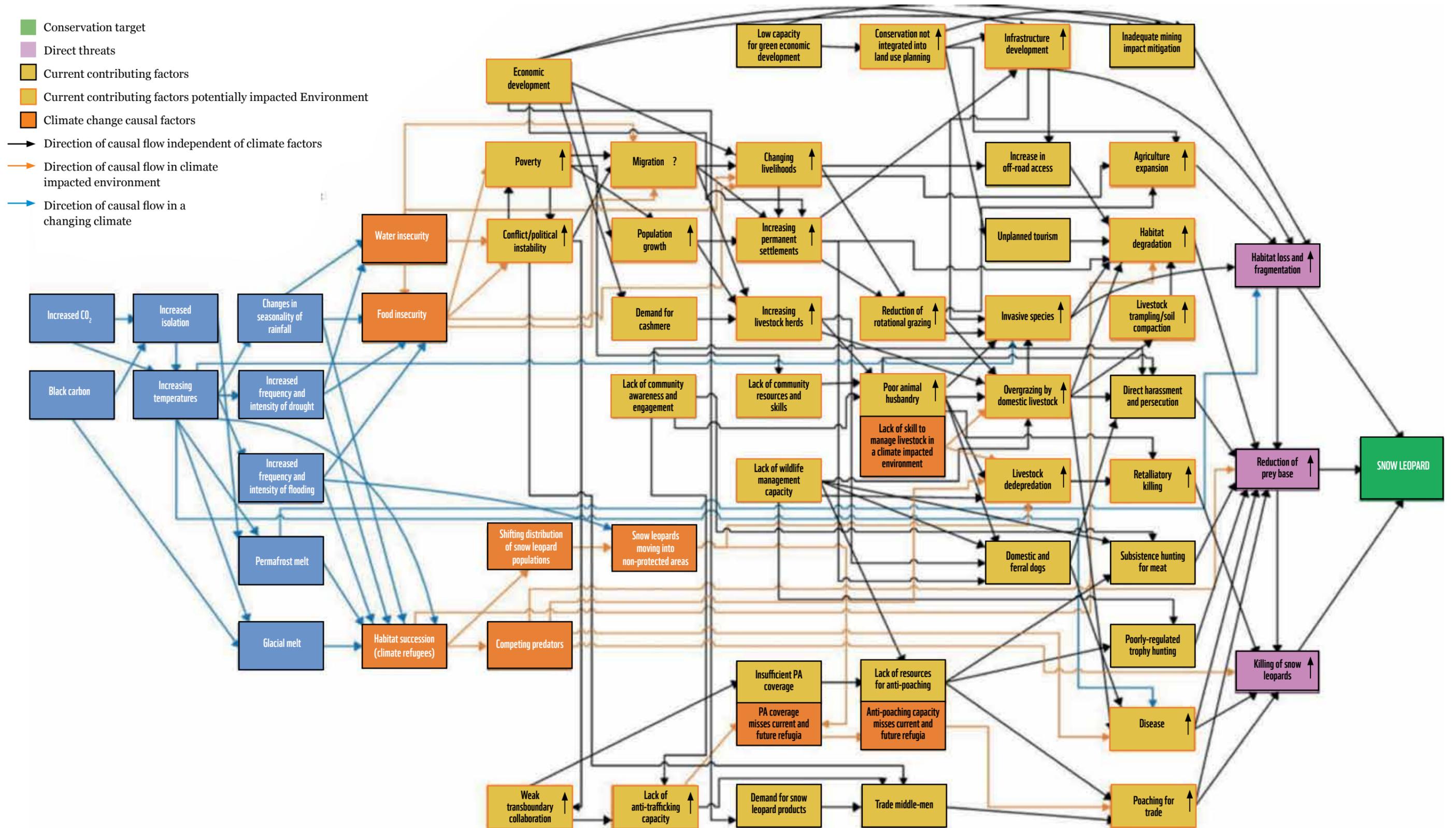
Threat Category & Description	Afghanistan	Bhutan	China	India	Mongolia	Nepal	Pakistan	Russia	Kyrgyzstan	Kazakhstan	Tajikistan	Uzbekistan
Category 4: Other Issues												
War and Related Military Activities	9	0	8	9	0	6	9	0	4	0	1	0
Human Population Growth (rapid) / Poverty (indirect threat)	10	5	7	7	6	3	10	0	12	3	10	11
Feral dogs attacking snow leopards and prey	1	10	5	11	3	4	7	0	0	1	2	7
General Poaching and Wildlife trade by migrant workers	3	2	5	10	3	8	11	0	8	9	1	0
General poaching by military personnel	13	6	0	7	3	0	9	6	15	8	11	9
Emerging Threats												
Climate Change	10	12	10	10	12	12	11	9	4	3	10	15
Growing Livestock Populations & Intensifying Human-Wildlife Conflict	11	13	12	10	13	9	15	9	13	10	15	15
Large-scale Development Projects -	1	0	12	10	10	11	10	7	5	6	10	0
Direct & indirect impacts due to mineral exploration & mining (local)	1	0	12	7	10	5	9	11	12	3	12	0
Impacts due to hydroelectric projects	0	6	7	5	5	12	9	0	3	3	6	0
Impacts due to roads or railroads	0	0	10	11	11	9	9	0	6	9	3	0
Disturbance related to Cordyceps Collection	0	12	10	7	0	12	0	0	0	0	0	0

Conceptual model showing current conservation issues for snow leopards



APPENDIX C

Conceptual model showing conservation issues for snow leopards in the face of a changing climate



APPENDIX D

Stakeholder analysis

Activity	Organization	India		Pakistan		Nepal		Afghanistan		Bhutan		China		Russia		Mongolia		Tajikistan		Kyrgyzstan		Kazakhstan		Uzbekistan	
		Hemis-Spiti	Nanda Devi-Gangotri	Hindu Kush	Pamir	Himalaya	Eastern	Central Complex	Western	Wakhan National Park	Snow Leopard Habitat	Qilianshan	Tuomuierfeng	Tashikuerganyesheng-dongwu	Altai	Altai	South Gobi	North Altai	Pamir	Sarychat	Jungar Alatau	Northern Tien Shan			
Predator-proofing night-time corrals	Snow Leopard Conservancy, Snow Leopard Trust, Panthera	X		X	X	X			X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Herder training on better animal husbandry	Snow Leopard Conservancy, Snow Leopard Trust	X		X	X	X			X		X	X	X	X	X	X	X		X	X					
Livestock vaccination	Snow Leopard Trust, Panthera	X		X	X						X	X			X	X		X	X						
Livestock insurance	Snow Leopard Conservancy, Snow Leopard Trust, Panthera	X		X	X	X			X		X	X	X	X	X	X	X	X	X	X					
Ecotourism ventures	Snow Leopard Conservancy	X			X	X			X					X	X	X				X					
Alternative livelihoods (sale of wool products, etc.)	Snow Leopard Conservancy, Snow Leopard Trust, USAID	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X				
Conservation education	Snow Leopard Conservancy, Snow Leopard Trust, Panthera, WCS, Beijing University/Shan Shui	X		X	X	X			X	X	X	X	X	X	X	X	X	X	X	X	X				
Patrolling and monitoring to protect SL and prey	Snow Leopard Conservancy, Panthera, WCS, Beijing University/Shan Shui	X		X	X	X			X	X	X	X	X	X	X	X	X	X	X	X	X				
Creating livestock-free wildlife areas	Snow Leopard Conservancy	X			X	X			X					X	X	X				X					
Collaring	Snow Leopard Conservancy, Snow Leopard Trust, Panthera	X		X	X	X			X		X	X	X	X	X	X	X	X	X	X					
Research including scat collection, camera trapping	Oxford WildCru, Panthera, Snow Leopard Trust, NABU, Beijing University/Shan Shui	X		X	X						X	X			X	X		X	X						
Mapping snow leopard range	Panthera	X		X	X						X				X	X		X							
Protected Area Management	USAID, GEF	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

Continued

Activity	Organization	India		Pakistan		Nepal		Afghanistan		Bhutan		China		Russia		Mongolia		Tajikistan		Kyrgyzstan		Kazakhstan		Uzbekistan	
		Hemis-Spiti	Nanda Devi-Gangotri	Hindu Kush	Pamir	Himalaya	Eastern	Central Complex	Western	Wakhan National Park	Snow Leopard Habitat	Qilianshan	Tuomuierfeng	Tashikuerganyesheng-dongwu	Altai	Altai	South Gobi	North Altai	Pamir	Sarychat	Jungar Alatau	Northern Tien Shan			
Protected Area Management	USAID, GEF	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Helping create regional and national action plans for SL	FFI, CMS, Panthera, WCS	X		X		X				X		X	X	X		X	X	X	X	X					
Foster scientific management of prey species to draw legal hunting for local revenue	Panthera	X		X		X						X				X		X							
Capacity building for rangers	FFI, CMS, Oxford WildCru, WCS			X		X				X		X	X	X		X		X	X	X					
Field training capacity building for park staff and community members	FFI, CMS, Oxford WildCru, WCS			X		X				X		X	X	X		X		X	X	X					
Anti-poaching	Interpol, NABU	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Promote intelligence exchange and cross-border investigation into illegal activity	Interpol	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Aid in apprehending criminals and organized groups	Interpol	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Climate Change	ICIMOD, High Mountains Adaptation Partnership	X		X		X	X	X	X	X	X	X	X												
Mountain ecosystem policy actions	ICIMOD	X		X		X	X	X	X	X	X	X	X												

WWF Snow Leopard Species Action Plan (SAP)

100%
RECYCLED



14

WWF works in 14 priority snow leopard landscapes.

4,000

As few as 4,000 snow leopards may remain in the wild.



12

Snow leopards roam across 12 Asian countries.

20%

Over the past 16 years, snow leopard numbers have declined by at least 20%.



Why we are here

To stop the degradation of the planet's natural environment and to build a future in which humans live in harmony with nature.

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