WWF

OVERVIEW

AHM

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CLIMATE ADAPTATION HIGHLIGHTS

CONSERVATION AND ADAPTATION IN ASIA'S HIGH MOUNTAIN LANDSCAPES AND COMMUNITIES PROJECT

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Snow Leopard Trust

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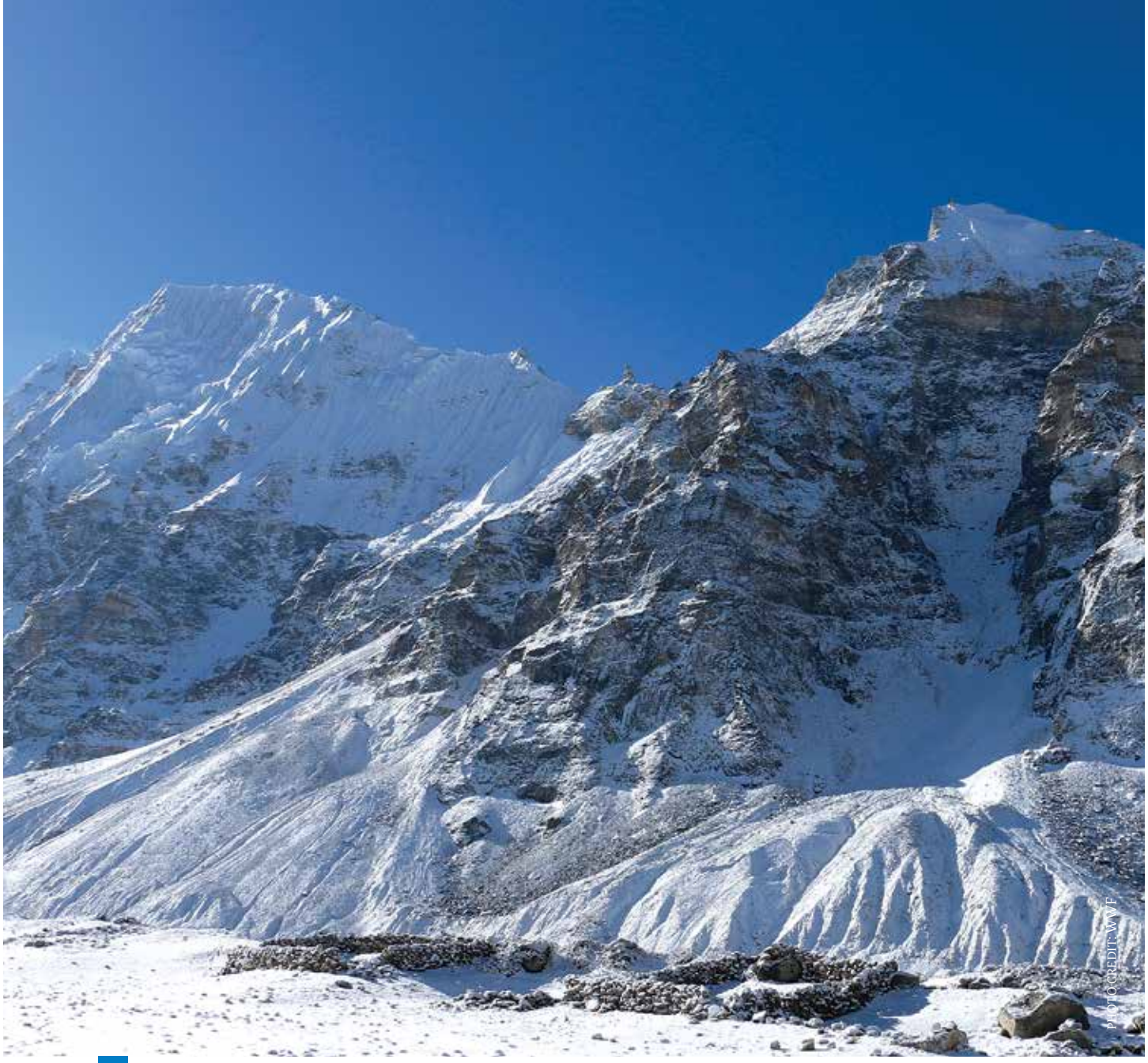

WWF Asia High Mountains Project

Climate Adaptation Highlights from Bhutan, India, Kyrgyzstan, Mongolia, Nepal and Pakistan

PHOTO CAPTION: Snow leopard habitat near Khambachen Village, Kangchenjunga Conservation Area, Eastern Nepal.

GLOBAL

Mapbook: Guardians of the Headwaters
A compendium of hydrological and climate modelling for snow leopard range. This mapbook illustrates potential changes to snow leopard habitat under varying climate scenarios and delineates connections between snow leopard range and water provision.

Third Pole Geo Lab
An interactive web-based tool and database examining snow leopard conservation, climate change, and water security issues in Asia's high mountains. This site seeks to foster collaborations among practitioners and scientists in the region; share information that will help restore, protect and build the resiliency of the snow leopard's range; and illustrate the connection between snow leopard habitat and the headwaters of Asia's most culturally and economically important rivers.

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Climate Vulnerability Assessments
Four pioneering climate vulnerability assessments were conducted for snow leopard range areas in India, Kyrgyzstan, Mongolia, and Pakistan. These vulnerability assessments take stock of opportunities and challenges and provide guidance on implementing climate adaptation interventions in snow leopard habitat.

5

Watershed Management Plans
Five climate-smart watershed management plans were prepared for AHM demonstration sites in Bhutan, Kyrgyzstan, Mongolia, Nepal, and Pakistan. Implementation of these watershed management plans will improve water security at these sites and serve as models for replication elsewhere in the region.

PHOTO: Mamata Pokharel/WWF Nepal

PHOTO : WWF India

BHUTAN

In the eastern buffer zone of Wangchuck Centennial National Park, a climate-smart village is piloting comprehensive climate adaptation strategies that will serve as a model for neighboring villages and beyond in Bhutan.

This demonstration project in a small mountain village of 26 households has increased resident's adaptive capacity through an integrated suite of climate adaptation activities. These activities include: vegetable farming in greenhouses, solar fencing to reduce crop loss to wildlife depredation, reforestation of water source areas, improved water storage and delivery facilities, and capacity building for local residents – all of which demonstrate simple actions mountain communities can take to improve their livelihood security in the face of a changing climate.

HIGHLIGHTS

- **2 climate-smart** watershed management plans were developed for critical tributary basins in the Nika Chhu and Kuri Chhu river watersheds.
- **57 households** adopted planting of fodder crops for winter stall feeding of livestock as one adaptation action to reduce grazing pressure on natural pastures and action improve watershed management.
- **1070 wetlands** were mapped using satellite imagery to inventory Bhutan's wetland resources and inform management interventions for these sites.

A LASTING IMPACT

By sponsoring a model climate-smart village, providing climate adaptation training for a wide range of stakeholders, and funding development of demonstration watershed management plans and vulnerability assessments, AHM Project work in Bhutan has been informing national initiatives on climate change, water resources, and snow leopard

PHOTO : UWICE, Bhutan

INDIA

Chewang Lachenpa is the leader of the Lachen Tourism Development Committee in Sikkim. His group of young leaders have banned bottled water in Lachen, conduct snow leopard camera-trap surveys, and have established homestays as part of a successful ecotourism industry in their mountain village. In doing so, Lachen has already become an inspirational model for similar work elsewhere in the country. By creating alternative livelihoods through the ecotourism industry, residents of Lachen are reducing their dependence on their local natural resource base and reducing pressure on ecosystems. In doing so, they are increasing their ability to adapt to a changing climate and making them effective champions of conservation efforts.

HIGHLIGHTS

- A **climate vulnerability assessment** for the Lachen area was developed that will inform state government policy on climate change.
- Implementation of an **innovative** sustainable caterpillar fungus harvesting campaign in Lachen that will reduce the impact of fungus collectors on fragile alpine meadows, increasing the resilience of these extremely sensitive meadows to climate change impacts.
- Training on making **bio-briquettes** from leaves and other waste plant material that will lead to a reduction in the cutting of trees and brush for fuel wood, increasing the resilience of local forests to climate impacts.

A LASTING IMPACT

Through AHM Project climate adaptation activities in Lachen and elsewhere in Sikkim, young community leaders in Lachen are informing local community members about the importance of preparing for future climate change impacts on Lachen, as well as the importance of protecting local snow leopards and other natural resources for the benefit of future generations.

PHOTO : WWF India

PHOTO : Mamata Pokharel/WWF

KYRGYZSTAN

Increased extreme snowfalls in the mountains of Kyrgyzstan and increasing wild predator populations are impacting livestock herders in the Central Tian Shan, who traditionally have herded sheep and goats. In order to address these issues, a demonstration yak herd has been introduced as a climate-smart alternative to keeping sheep and goats, since yaks are not only more profitable than sheep, but also better adapted to extreme climates and less vulnerable to predation by snow leopards.

HIGHLIGHTS

- A pioneering **climate vulnerability assessment** was developed for the Central Tian Shan that informed the development of the snow leopard landscape management plan for this GSLEP Priority Landscape.
- An innovative **watershed management plan** was developed for the Chon Kyzyl Suu River basin with the goal of improving water security in this basin.
- In conjunction with the demonstration yak herd, a system of increased rate of **pasture rotation** has been launched in the buffer zone of the Sarychat-Ertash State Nature Reserve that involves leasing large areas of formerly disused highland pastures.
- **Water security** of Ak Shyrak Village near the Sarychat-Ertash reserve has been increased through improvement of the village's water delivery system.

A LASTING IMPACT

The work done to produce the climate vulnerability assessment and the climate-smart snow leopard landscape management plan for the Central Tian Shan GSLEP Priority Landscape will inform landscape conservation efforts not just in the Kyrgyz Tian Shan but also in neighboring snow leopard landscapes elsewhere in Central Asia.

NEPAL

In eastern Nepal's Kanchenjunga region, one climate adaptation strategy has been the introduction of greenhouses in high altitude areas to diversify crops and improve food security, in many cases in areas where it was formerly impossible to grow fresh vegetables due to the cold mountain climate. A second overwhelmingly successful adaptation strategy has been to improve water security of farmers through the introduction of water efficient sprinkler irrigation systems. Using these sprinkler systems, many farmers in the Kanchenjunga have managed to double their cardamom production, greatly boosting their incomes.

HIGHLIGHTS

- Preparation of a climate-smart snow leopard **landscape management plan** for Nepal's Eastern Himalaya GSLEP Priority Landscape.
- Preparation of an integrated watershed management plan for the Tamor River Basin in the Kanchenjunga Region.
- Repair of trails and bridges and introduction of clean piped water systems have increased use of formerly disused pastures. This has resulted in increased rates of **pasture rotation** in high mountain areas which will contribute towards increasing the resilience of mountain pastures to climate change impacts.
- Introduction of improved metal cook stoves is reducing wood consumption in the Kanchenjunga Region, which will contribute to improving **forest health** and increasing the resilience of local forest to climate change impacts.
- Training of local residents to be citizen scientists assisting in WWF snow leopard research efforts also has the added benefit of establishing a core group of **local wildlife experts.** These experts will one day be able to diversify their incomes by serving as wildlife guides and naturalists for trekking groups visiting the Kanchenjunga Conservation Area.

A LASTING IMPACT

AHM Project-funded future climate scenario modelling for the eastern Himalayas of Nepal, including prediction of future of **snow leopard climate refugia,** has informed development of Nepal's Eastern Himalaya snow leopard landscape management plan. This plan will now serve as a model for replication in preparation of companion landscape management plans for Nepal's Western and Central Himalaya GSLEP Priority Landscapes. In addition, the landscape management planning process developed for the Eastern Himalaya GSLEP Priority Landscape will also serve as a model for climate-smart snow leopard landscape management planning in the other 11 GSLEP member states. On the ground in the Kanchenjunga Region, much of the **increase in household incomes** resulting from AHM Project cardamom irrigation and greenhouse activities will likely go to paying for higher education for the children of these farmers, which will ultimately permit these children to pursue career options beyond subsistence agriculture and herding in their mountain homes.

In a mountain village in Kangchenjunga, Pema Sherpa waters vegetables in her greenhouse. Earlier her family had to buy vegetables from lower altitude villages. With the greenhouse, they can now eat fresh vegetables year round.

PHOTO : Manaita Pokharel

MONGOLIA

In the Mongolian Altai Range, the AHM Project has funded climate adaptation work that focuses on improving resilience of grassland ecosystems in snow leopard habitat to climate change impacts. This work has included helping herders improve pasture management, particularly by increasing rates of pasture rotation. One notable success of AHM Project adaptation work in the Altai Region of western Mongolia has been the creation of **local protected areas,** such as the Sair Mountain Local Protected Area (LPA) in Bayan Olgii Aimag's Tolboo Soum. At Sair Mountain, local residents have voluntarily agreed to close important ibex habitat to grazing and have had their mountain officially declared an LPA by the Bayan Olgii provincial government. In addition, residents of the Sair Mountain LPA have launched a successful **ecotourism program** that is diversifying their income as one adaptation strategy to reduce the dependence on local grazing lands.

HIGHLIGHTS

- A regional **climate vulnerability assessment** was prepared for snow leopard range areas of western Mongolia's Altai Region. This vulnerability assessment included an extensive social survey on climate change and its impacts on this region. The assessment is now guiding development of climate adaptation strategies for western Mongolia.
- **Pasture databases** have been compiled for five soums in snow leopard range areas of Khovd province to guide rotational pasture management planning in these administrative units.
- An Integrated Water Resource Management Plan for the Khuisiin Gov-Tsetseg Lake Basin has been completed. This plan will support climate adaptation planning with respect to water security in the basin. Plan recommendations on repair of broken wells as one way to increase pasture rotation are already being acted upon.
- At Jargalant Khairkhan, as one adaptation strategy local herders are diversifying incomes by establishment of a **mobile tourist yurt camp** and production of **felt handicrafts** for sale to visiting tourists.

A LASTING IMPACT

The climate vulnerability assessment and integrated water resource management plan developed for the AHM Project region of western Mongolia are already guiding climate adaptation efforts in the Altai region and will serve as models for replication elsewhere in Mongolia in coming years. Notably, successful models for low-impact snow leopard-themed tourism development at Jargalant Khairkhan and Sair Mountains are inspiring similar efforts at remote mountain locations elsewhere in western Mongolia, which will serve as an **effective adaptation strategy** for diversifying local livelihoods.

PHOTO : WWF Mongolia

PAKISTAN

The road to economic empowerment for 125 women in the Hoper Valley, Gilgit-Baltistan began with a six-month alternative livelihood training that WWF organized. As one climate adaptation strategy to reduce villagers' dependence on the local natural resource base in snow leopard range areas of northern Pakistan, these women were taught a variety of new skills, including drapery making, design, stitching, embroidery, carpet weaving, and knitting of woolen sweaters and socks. Some of these women now earn about ten-thousand rupees per month from these activities, with which they support their families and decrease their dependence on livestock rearing.

Other climate adaptation activities being carried out by WWF in northern Pakistan include the establishment of a demonstration grazing set aside to close a degraded mountain pasture to livestock grazing for several years, planting of trees on degraded land to prevent further deterioration of these sites, and extensive planting of fodder crops on degraded land for stall feeding of livestock to reduce grazing pressure on mountain pastures. All of these activities will contribute to increasing the resilience of local mountain ecosystems to climate change impacts while also having benefits for watershed management.

HIGHLIGHTS

- Completion of a climate vulnerability assessment for Hoper Valley in Gilgit-Baltistan that will guide climate adaptation planning at Hoper and serve as a model for replicating these vulnerability assessment and adaption processes elsewhere in northern Pakistan.
- Completion of a watershed management plan for the Phargram Gol River basin in Laspur Valley, Chitral, which will serve as a model for climate-smart watershed management elsewhere in northern Pakistan.
- Completion of various livestock vaccination campaigns as one adaption strategy to reduce loss of livestock to increasing incidences of disease outbreaks that are believed to be the result of climate change.
- 125 Women trained in sewing and knitting skills providing them with climate-smart alternative income to farming and livestock rearing.

A LASTING IMPACT

The introduction of climate vulnerability assessment, climate adaptation, and watershed management planning processes to AHM Project Sites in northern Pakistan will eventually make a large contribution to improving sustainability of development initiatives in this disaster-prone region. Notably, training of women in alternative livelihood activities such as sewing and knitting, home kitchen gardening, and poultry raising is helping empower women by providing them with independent sources of income that they can manage themselves and will provide them with a larger say in managing household affairs.

PHOTO: WWF Pakistan

Equipped with new knowledge and innovative technologies, communities in Asia's high mountains are not just conserving their snow leopards, but also increasing their own capacity to adapt to a rapidly changing climate.

PHOTO : Sanjog Rai / WWF Nepal

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+ 5M

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