

# Conserving Biodiversity through Institutional Diversity: Concept Paper

## **Full Text:**

### Aims of the project

Globally, the Snow Leopard is under threat of extinction or approaching a minimum viable population size. The IUCN Red Data Book (IUCN, 1996) currently describes the snow leopard as “Endangered”. Globally, there is an estimated 3000-7000 animals left in wild. In Pakistan, the number of SL are estimated to be 200 (Schaller, 1977). Of that, an estimated 100 snow leopards reside in Baltistan.

Fundamentally, the objective of this project is to conserve the snow leopard in the Baltistan Region of northern Pakistan. There are many sources of threat to snow leopard habitat fragmentation, decline in prey species and retaliatory killing by farmers. It is the last threat that this project aims to address.

This project will be implemented on a pilot basis in Skoyo Village, Skardu District. Skoyo is located about 60 Km. West of Skardu Town. It is a village of 24 households with a total population of about 200 people. The villagers are mostly farmers, and livestock plays a central role in the household economy. Skoyo was selected as a pilot site because of regular incidences of snow leopard predation of domestic livestock in the last five years. The villagers have tried several times to seek assistance from the government and local NGOs to alleviate this problem; this confirms their interest in and need for project. Another reason for selecting Skoyo is that it is confirmed that the killings are from snow leopard. The other possible wild predator of domestic livestock, the Himalayan Wolf, is non-existent in the village and its vicinity. IUCN has carried out surveys in the areas and confirmed that the only wild predator in and around the village is the snow leopard.

### **The Problem: Economics, Institutions and Property Rights**

Snow leopard predate domestic livestock, thereby threatening farmers' livelihood, and farmers retaliate by killing snow leopards. The numbers of snow leopards killed by farmers in the last few years is not known. For reasons of facing heavy penalty, the farming community that kills a snow leopard does not confide the incident in outsiders.

The economics of insurance and uncertainty (risk) provides a basis for the establishment of a socio-economic institution, one that is based on mutual insurance and reciprocity. However, it is imperative that we understand the economic underpinnings that permit such institutions (or social norms) to survive. If, for example, there is a random shock that may have the same distribution across farmers, but effects each one independently, i.e. the probability that at least one farmer will be hit each year with an expected value of loss, there is an opportunity for all villagers to pool their resources and spread the risk in order to smooth out unexpected variations in income or in consumption needs.

At a global level, there is another set of issues to be resolved. As mentioned above, economic factors focus on the incentives offered to the individual. If it turns out that

ordinary people have the incentive to destroy components of biodiversity uncertainty and pricing and valuation in this case then we should not be surprised if this really happens. In essence, individual farmers or even the village is weighing up its marginal private benefits and costs with respect to the perceived risk. This equation, however, does not take into account the 'true' value of biodiversity, the SL in this case. True value means more than its use value, it also includes its non-use values. For this global level of issues to be resolved, it is essential that the true social value of biodiversity be elicited. For this purpose, methods revealing the appropriate pricing and valuation need to be demonstrated and captured at local decision making levels. Administratively and managerially, the local level is the most effective location for this realization. The method of SL ecotourism, a complementary feature of this project, provides an example of non-use value to demonstrate a step in eliciting true social value.

Incidences in the Northern Areas of snow leopard being captured by local people provide some information of the SL subjected to retaliatory killings by the farmers. In the last 3 years there have been at least four cases recorded when a community has captured a snow leopard (trapped in a corral) and informed the local conservation NGOs and government administration. In all four cases the snow leopard which had done some damage to the livestock was released unhurt. This may seem quite irrational behavior on part of the local people in terms of keeping the source of risk alive. However, the reason for such a seemingly irrational behavior may not be so irrational.

From the property rights perspective, the idea that clear and enforced property rights provide the incentive for efficient solutions to externalities, illuminates this scenario more so. The SL, in this context, is the property of the government, which is in effect producing external effects on local villagers. The standard theoretical solution is that through side payments, government compensates local villagers for any adverse effects, and hence an efficient solution is achieved. Indifference (power), incapacity (financial or otherwise) and ignorance (non-realization of true value), however, may thwart this solution, on the part of the government.

In fact the above-mentioned cases may highlight the community's desire of seeking a mechanism that can resolve this conflict. Indeed, when a community traps a snow leopard it faces two choices. Either kill the snow leopard and eliminate the risk, or inform the local NGOs and release the snow leopard and keep the risk alive. We believe that the reason that certain communities have kept the risk alive is that by doing so they gain the interest and sympathies of local NGOs. The local communities perceive these NGOs as provider of knowledge, opportunities, and information, so the future gains that can be made from working with these NGOs are more than the expected losses from keeping the snow leopard alive. More precisely, the locals are seeking some institutional mechanism to guard against SL predation.

### **Risk factor**

Data on loss rate of livestock predation over the last five years has been collected from Skoyo. The data suggests 55 animals (50 goats and 5 cows) have been killed in the last

five years. This makes an average of 10 animals per year or on average about 2% of the total herd size is lost every year. 8 out of total 24 households have been hit by snow leopard predation in the last five years. In the last 2 years, however, all 8 have been hit. In addition in the last two years about 26 animals were killed which amounts to about 50% of the total losses in the last five years. This trend suggests that the number of animals being killed and the number of people being hit have increased by 3 folds in the last two years.

The magnitude of risk varies among individual farmers. For each individual income levels and the representation of livestock in the total assets of the farmer will determine the risk. Therefore, different farmers will be willing to pay different premiums determined from their willingness to curb the uncertainty (in future consumption) arising as a result of risk.

### **The Project Setup**

There are inherently two projects within Project Snow Leopard. The first being the establishment of insurance mechanism in the village against losses arising from snow leopard predation; and the second being the promotion ecotourism based on snow leopard sighting.

Conceptually, the two projects or components fit together quite well. The first component, i.e., the insurance scheme will help remove/reduce the incentive to kill a snow leopard; and the second component, i.e., the ecotourism activity will, in fact, serves as an incentive to conserve the snow leopard.

The insurance scheme by itself may not be a viable enough strategy to conserve the snow leopard because a snow leopard will essentially address the problem of the local people. Even with insurance, the snow leopard will still be seen as a nuisance, which the farmers will try to eliminate when they can. This argument is based on the idea of why people take out insurance on anything. It is argued that people take out insurance in cases when the cost associated with eliminating the risk is higher than the cost of the insurance, and hence have a certain income/consumption over time. It is assumed that the cost of eliminating a snow leopard in Skoyo is high. The probability of finding a snow leopard in a close (shooting) range is low. Most killings of snow leopard are incidental in nature. So assuming that the farmers think that the cost is too high or unknown therefore it is better to insure against it. But taking out insurance has cost associated with it the yearly premium - which the farmer would rather not pay. Based on this motive, i.e., not to bear the cost of insurance (by eliminating the risk) the farmers will, when he can, kill a snow leopard. The missing link here is the incentive to conserve a snow leopard.

Snow leopard is endangered. It is a scarce component of biodiversity. There is a value attached that should reveal its scarce nature. However, the villagers are not aware of this value, rather for them it is a nuisance, which they rather have not than have. In essence, currently the villagers under value SL in their calculus, and hence the disincentive to conserve and the incentive to eliminate it. The insurance scheme addresses the incentive

to kill a snow leopard part of the problem. The second part of the problem, i.e., the disincentive to conserve it is addressed by introducing an incentive to conserve it by promoting ecotourism activities based on snow leopard sighting. The income from the trekking activity will demonstrate part of the true scarce value of the snow leopard and the villagers will be able to capture that value. It is believed that this value will serve as an incentive to conserve the snow leopard. Put differently, villagers are provided the property right of non-use value, which is reflective of its true social value.

### The Design

Under the insurance scheme all members have been asked to insure all of their livestock at a premium rate of 1% of the total value of the herd. This number, the premium that the farmers should be willing to pay, is a function of income of each individual farmer. No data was collected on the wealth size of each individual farmers therefore true premium rates could not be ascertained individually. The rate 1% was suggested by the project because the average annual loss in the last five years is 2% of the total value of the herd. So assuming that there will be again 2% loss in the first year of the insurance the villagers should at least cover 50% of the average annual loss from their premium payments.

A fund has been created out of the insurance premium payments. This is called Fund 1. The total premium amount of each member in Fund 1 will be based on the number of livestock one has. For example if member A has 10 goats he has paid  $10 \times \text{Rs. } 15 = \text{Rs. } 150$ , member B has 25 goats, he has paid  $25 \times 15 = \text{Rs. } 375$ . So the amount of premium will vary according to the value of the livestock for each individual. The members will be eligible to earn interest on it. The interest of profit will be distributed according to the total premium amount of each individual.

Another fund called Fund 2 is created by the Project. In this fund, contributions will come through trekking activity that is organized by the Project. This trekking activity is for snow leopard sighting. The project has initiated a trekking company that has developed a snow leopard trekking package. Two packages have been marketed successfully this year (two groups of trekkers, mainly foreigners, in varying sizes) for Skoyo. It is estimated that Rs. 50,000 will be raised for Fund 2 through this activity.

### How the insurance scheme works

The scheme is intended to be as much locally self sustainable and managed as possible. For this purpose a Village Insurance Committee is set up. The members of the Committee are the members of Skoyo Village are nominated by the villagers according to their preferences. The Committee will keep the premium record of each individual member in Fund 1, and will distribute the profits accordingly.

In case of a killing by snow leopard, the claimant will file an application with the Village Insurance Committee (VIC). A Claim Application Form has been designed and will be

given to the VIC. The VIC will verify the killings and give its recommendations. If the VIC recommends that compensation is to be given then the following steps will taken.

1. First the claimants premium amount in Fund 1 will be exhausted.
2. The remaining compensation amount, if any, will be taken out from Fund 2.

The VIC will be the signatory on checks written out for Fund 1. For Fund 2 VIC and the Project will both be the signatory. The project will sign the check when the VIC has approved the compensation amount and forwarded its recommendation on the Claim Application Form to the project. The project also keeps the right to physically verify any claims.

To illustrate this by an example, suppose that member A has 30 goats. In the first year he paid  $30 \times 15 = \text{Rs. } 450$  into Fund 1. The same year a snow leopard attacks his herd and loses three goats. The value of the goats claimed by the member A is  $3 \times 1000 = 3,000$ . The VIC will verify the killings and approves an amount that should be given out to member X. The VIC will also estimate the value of the goats. The VIC will first try to compensate member A from Fund 1 by taking out his total premium amount. In this case VIC will take out Rs 450 out of Fund 1. The remaining amount  $3,000 \text{ minus } 450 = 2,550$  will come out of Fund 2.

All members will keep on paying in the premium in Fund 1 annually. They will also keep getting profits on this premium. Only those members of the community will have access to Fund 2 who have paid in the premium amount in Fund 1. In the above case, if the member A exhausts his premium in Fund 1 by claiming for losses, he should pay in the premium on the remaining goats (three less), in order to insure himself for next year. However the premium rate for second time may be different (higher).

### **Advantages of the design and incentive system**

The advantage of this design is that unless the entire village colludes and decides to cheat, it is very difficult for an individual to cheat. This is also an equitable arrangement as each member will pay according to his value of herd and will pay the premium accordingly.

This will also address an emerging problem for snow leopard conservation in the region in general and in the village in particular. When the project approached the people and introduced the idea, the people said that they do not want their goats to be insured rather they want the Markhor to be insured. They said that in the last two years the snow leopard has killed at least 25 (!!!???) Markhor in the Skoyo area. Their stock of Markhor is decreasing and they are concerned about it. This concern, however, could become an additional source of threat for the snow leopard.

This concern for markhor conservation is certainly new among the villagers of Skoyo. Why do they want to conserve the markhor and not the goats? The reason is that IUCN under its Biodiversity Conservation Project introduced markhor trophy hunting in Skoyo.

Last year a hunt took place in the Skoyo from which they earned Rs 100,000. This had a demonstrational effect on the people of Skoyo. The hunt and the subsequent flow of money demonstrated a non-traditional use of the markhor.

The snow leopard and the markhor are two important components of local biodiversity, and like all biodiversity they compete and depend on each other for survival. In its natural state the snow leopard preys on markhor thus keeping its population under control. The use of incentive to conserve one particular component of biodiversity, in this case a markhor, rather than the whole ecosystem may introduce forces that favor one component of biodiversity over the other. The snow leopard is seen competing directly with the interests of the local people, i.e., the use of markhor, the villagers thus have two reasons to eliminate it safeguard their livestock and safeguard the markhor. Therefore there is a danger that incentive to conserve markhor may in fact become a disincentive to conserve the snow leopard.

The project introduces a multiple use regime for the snow leopard, i.e. extending the definition to take advantage of non-use values. Once income from snow leopard trekking (non-use value) is demonstrated and captured by the village, as in the case of the use of markhor, the snow leopard will be seen as an 'asset' by the villagers.

The project intends that the villagers enjoy benefits deriving from the snow leopard. The control over the flow of benefits (stream) that are created from the snow leopard to the villagers will also help develop *de facto* (non-use) rights over the snow leopard by the Skoyo people. This right may never culminate into (full) ownership right, but for the purpose of its conservation, established non-use rights and capture of value is a very healthy and welcomed effect.