

# **Silent Revolution**

Case Studies from Dir Kohistan Project

Environmental Rehabilitation in NWFP and Punjab (ERNP)

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## **Silent Revolution**

Nestled between the rising heights of the Hindu Kush mountain system, for centuries Dir Kohistan valley remained one of region's best-kept secrets. Situated in extreme north of the country near Pak Afghan border, valley's only access to the outside world is provided by a small corridor that opens into the district of Upper Dir.

The total length of the valley is about 150 km. It has an area of 16702 ha and its population is 112,000. There are some 196 villages and 15600 houses in the valley. The area lies at a height of 1400 to 2200 metres above the sea level. With mild summers and harsh winters, the climate in the valley is temperate. Much of the valley is covered under snow from December to February. This snow in fact forms much of the annual rainfall, which is 1100 mm.

The valley was part of the princely state of Dir till its abolition in 1960. It was only after state's annexure with Pakistan that the valley opened up to outside influences. Kohistanis form a majority in the valley, followed by Pashtuns and nomadic Gujars. The people are conservative Muslims and follow a tribal culture that is based on an egalitarian tribal code of honour. The disputes within tribes and between tribes are resolved by the assembly of local elders called "Jirga".

The locals depend heavily on natural resources for their survival. Main sources of income include forest royalty, agriculture, livestock, sale of non-timber forest products and manual labour in down districts and abroad. The area lacks basic infrastructure and social facilities. The situation of law and order is also quite poor. A phenomenal increase in human and livestock population and changing lifestyles has increased burden on the environmental resources. The services of basic health and education are mostly conspicuous by their absence. The literacy rate (only reading) is 16% in males and about 0.5% in females.

The females have a low social status, though they carry a lot of workload in agricultural activities and house hold management. They have the least access to modern medical facilities and cash income. They are the invisible half and are excluded from decision-making.

The valley has three different types of ecosystems, i.e. Oak Forest near the valley bottom, mixed coniferous forest in the middle and alpine pastures at the top of the mountains. Ownership status is contentious: Government claims to be the owner of the natural resources and legally the communities are the concessionists whereas the communities claim the ownership of all the resources in all the three types of vegetation. The control of Oak Forest and alpine pastures is with the community. The Government manages the Coniferous Forests. The management is confined to timber harvesting for earning revenue.

The socio-economic situation of the valley was caught in a downward spiral till a few years ago. While land holdings were on the decline due to land fragmentation, people's reliance on forests was on the rise. In absence of any land settlement, new cultivated lands were being carved out constantly by encroaching relatively low lying oak forest areas and in several cases high coniferous forests. People looked at these forests as a limitless resource that could be harvested for fulfilling local needs as well as for generating cash. Local communities used to remove timber and firewood freely and their livestock grazed everywhere.

The landscape was dominated by hallmarks of environmental degradation. Soil erosion was accelerating due to deforestation and environmental deterioration was causing decline in agriculture yields. Due to lack of expert guidance, only a small number of crops were grown. These included maize, wheat, potato and beans. Fruit orchards, though most suited to the area, were not planted. Whatever farmers produced was hard to transport to the market due to lack of farm to market roads and lack of communication infrastructure.

People were increasingly becoming unable to meet their food requirement from their farms and were forced to rely more and more on off-farm income to meet their basic needs. In some villages, people were migrating from the valley in large numbers.

The valley had a rendezvous with development and environmental rehabilitation in 1997 when Dir Kohistan Project was launched as a part of the Environmental Rehabilitation in NWFP and Punjab (ERNP) programme with support from the European Union. The programme is aimed at halting and reversing the process of environmental degradation through integrated measures for rehabilitation and conservation of the rich natural resource of the area. Besides the Government of Pakistan, the World Conservation Union, (IUCN) Pakistan has played a central role in the design and implementation of the project.

Utilizing many of the techniques of integrated rural development, the project is mainly an environmental management venture aiming to halt and reverse the ongoing processes of

environmental degradation. The project aims at strengthening local capacities for sustainable resource management and making an effort for striking a balance between economic growth and the preservation of economic resources. This is done through interrupting the process of current degradation of watershed lands and natural resources. It adopts a community-based approach and turns locals into de-facto resource managers. The project activities ensure community's interest in sustainable management and ensure their development as well as environmental rehabilitation.

Community members are encouraged to form village organizations, which are actively involved in project activities. They address various issues concerning Natural Resource Management (NRM), through identification of priority needs and formulation of Village Development Plans (VDPs). The implementation of VDPs is based on active involvement of local communities according to the agreed Terms of Partnership. A Village Development Fund is generated through evolving a system of savings and community makes thirty percent contribution towards various project interventions. All the interventions are undertaken by the communities with technical facilitation by the project staff. To ensure effective implementation, a system of Participatory Monitoring and Evaluation has been put in place.

These organizations are supported until they become self-sustaining and used as channels for delivery of appropriate inputs. Over 80 organizations have been formed since inception of the project to set a platform for participatory management of natural resources. The communities have been strengthened by enhancing their capabilities in identifying the natural resources related problems, finding appropriate solutions and developing suitable implementation mechanism to address the problems at local levels.

The project comprises a multi-disciplinary team approach to respond quickly and professionally to the requirements as determined through the social organization process. The project has also tried to build capacity in communities, in NGOs, in Forest Department and other line departments. Managerial and technical skills have been imparted to the people in order to reduce dependency and to strengthen institutions.

A lot of effort has been put in to equip villages and community members with the managerial and technical skills necessary for sustainable management of the village environment. Therefore, the project has launched an extensive training programme at this level that includes training of Livestock Extension Workers (LEWs) and Agriculture Extension Workers (AEWs). Managerial skills have also been imparted to those running organizations or enterprises and village specialists have been imparted new skills.

The project has assisted village organizations with physical infrastructure through the agreed social organization process and VRSP. Principle activities include irrigation channels, micro-hydropower stations, drinking water supplies and access tracks. Capitalizing on the valley's comparative advantages, special effort has been made to introduce fruit plants, off-season vegetables, development of fisheries and livestock.

Sustainability is an integral part of the project and all activities are carried with and through the people who own the interventions and become guardians of the change.

The case study that follow look at the socio-economic changes that have swept in the area due to the project. These case studies glance at some of the interventions through the perspective of the people. They are a testimony to the work done by the project staff as well as the ingenuity and resilience of the people of valley. Though the data was gathered using anthropological methods of investigation, the case studies have been presented in a way that they could be accessible to anyone interested in listening the story of a people who have joined the race for development without making their natural resources a hostage to their short term needs.

The first case study “Doing Their Own Work” is the story of the transformation of a village from an environmental and economic disaster to a model of sustainable development. The second case study “From Darkness to Light” shows how one of the least educated people have become producers and managers of their electric supplies and what the recent electrification means to the people of the area. The third case study “Bovine Idiom” is about the capacity building of the communities who have taken charge of the well-being and health of their animals, benefiting their economy and environment. The fourth and final case study looks at the remarkable struggle to conserve the forests in the area.

## **Doing their Own Work**

With its tranquil, serene beauty, on the first glance Samang looks like a place frozen in time. But an encounter with a single resident can be enough to convince a visitor that the village has undergone immense changes in the last five years. For the residents of Samang, this period marks a new era that stands for prosperity and development. “You won’t believe how much has changed in this village,” says Samiuddin, a resident.

The village of Samang is situated about two kilometers from the town of Sheringal on the Sheringal-Dir road. The village consists of 150 households and its population is two thousand. Majority of the population lives in four hamlets, though there are also some individual houses. With 25 percent literacy among the male residents of less than 25 years of age, the village is considered highly educated by Kohistan standards. Ethnically, overwhelming majority of residents in the area are Pashtuns.

The village has a cultivable land of 215 acres, which means that only 1.3 acres land are available for a household. For their livelihood, majority of people depend on a mix of livestock, agriculture and labour. The resource constraint has in fact created a strong push factor for out-migration, forcing many to leave the valley.

As the land resource fragmented and forests dwindled and disappeared, the residents of the village did not have much to look forward to, that is until ERNP-Dir Kohistan Project arrived on the scene. Though in desperate need for outside guidance and support, people received the Project with extreme caution. "We were full of suspicions, like many other areas of the valley," says Mian Bacha, a local farmer. "People asked, 'why are these people trying to help us?' and feared that they must be after our forests or with the money from Europe, they must be trying to convert us to some other faith."

However, these suspicions were soon dispelled, thanks to educated members of the community who were contacted by the project staff and were able to understand its objectives quite easily. Already worried about the situation of the village, this group soon formed Samang Development Organization with the ambition to change the fate of their village. As they soon realized, they had to cross many hurdles.

The project demanded formation of a democratic village organization. This was easier said than done. Though the people in Dir Kohistan have a democratic culture and enjoy social equality, it is a fragmented society nonetheless. People are organized around clans, locally called *Khels*. These *khels* are represented and led by tribal elders, locally called *maliks* or *masharaan*, who are elected in an informal way by members of their clans. All decisions in the village are made by the assemblies of these elders, called *jirgas*, where these elders represent the interests of their respective clans and of the village as a whole. In the Kohistani culture, community and clan interests always take precedence over individual interests.

In absence of strong state institutions, *Jirga* is a crucial cultural mechanism to solve conflicts and to arrive at democratic decisions. The decisions made by *jirgas* are binding in nature and they are implemented in letter and spirit. However, *jirga* has some important shortcomings also. It is problem oriented and non-developmental. It has no financial bases and its membership is restricted to the community elite only, completely leaving out the young, the less influential residents and women from the process of decision-making.

The Social Organization Strategy of the project, on the other hand, aims at setting up sustainable and democratic social institutions by promoting gender equity, capital formation, human resource development, transparency, equity, rotation of leadership and free flow of information. It takes the best elements of the *jirga* systems and grafts development principles on it. People were now required to join hands for development of the whole village and protection of their natural resources rather than worrying about the interest and prestige of their clan alone. Once converted, people found it easy to follow the new social organization as it builds upon the *jirga* system and adds elements of development to it.

The project selects a village for intervention if community is willing to participate, if the village has vast area attached to it and if it is an area of significant natural degradation. Information about the village is collected and a general village meeting is held in which goals and approach of the project is explained. It is expected that no less than 40 percent of the residents will join this meeting in which the Village Organization (VO) is formed and its representatives are elected, giving due representation to all clans and hamlets. In these meetings, a constitution of the VO is also formulated. The village organization is supposed to run its affairs democratically, making all its decisions through resolutions in open meetings.

Samang Development Organization was formed in 1998 as a village level organization that aimed at representation of each clan and hamlet. Each clan nominated its representative to the organization and soon women groups were also formed, which was a great leap forward, though these groups operated from their homes.

The first important achievement of the organization was preparation of a Village Development Plan (VDP). For the purpose a series of meetings were held involving community members, community representatives and the project staff. During these meetings, the village resources were listed and threats to these resources were identified. The problems were prioritized, the underlying causes deliberated and action agreed upon. It was agreed that the required actions would be taken over a period of five years. "These meetings were an eye-opener for us, says Mohammad Azeem, a member of organization's executive committee. It was for the first time that we analysed our situation and ventured to plan for change," he adds.

The survey carried out in the process of formation of Village Development Plan found that per-unit agricultural productivity in the village was extremely low. The Samang organization determined to improve the productivity with the help of the project. The causes of low productivity were identified and a number of activities were set in motion that ultimately turned agriculture into a much more gainful vocation.

The project invited the village organization to nominate a community member for training as Agriculture Extension worker. The selected candidate, Wali Ahmad, was trained in modern practices of agriculture and has been active in the last five years in spreading new techniques of agriculture to his fellow community members.

To bring water to lands which were so far barren, or where water supply was not sufficient, a two and a half kilometer long irrigation channel was constructed that diverts water from the Panjkora river and irrigates some 120 acres of land, benefiting more than 150 households. The centuries old technique of irrigation ponds was also given a new lease of life as locals set-up a number of ponds with the help of the project. These ponds collect trickle of water oozing out of small springs and make it available for agriculture and drinking purposes. These ponds are also of immense help in the dry seasons.

Before the project started, the farmers were not trained in horticulture and were hesitant in planting fruit orchards. The Samang organization arranged extension facilities and Johar Ali, a local farmer, set up a small nursery of apple saplings. Many farmers converted their small farms into fruit orchards, which have now started blooming.

Vegetable production, which was limited for household use only, was introduced at a commercial scale. Now the village exports such vegetables as tomato and onions at a premium price to markets in larger cities. The traditional subsistence crops have also got a boost as the village has completely switched to better yielding varieties of wheat and maize introduced by the project.

The agricultural activity has also been boosted due to improvement in infrastructure. The Samang organization has constructed two roads that, winding treacherously through the mountainside, connect all the hamlets, farms and forests. These roads, more than three kilometers in length, have made it possible for farmers to easily transport inputs and carry their produce to the markets.

The villagers own 1026 livestock animals, which means that every household owns close to 7 animals and population of the livestock animals is more than half the population of human beings. But livestock in the village faced such nagging problems as poor local breeds, fodder shortage, poor management practices, parasites, frequent outbreak of contagious diseases and lack of readily available veterinary assistance.

When the project offered an opportunity to train a Livestock Extension Worker (LEW), the village organization jumped at it and nominated a young resident, Hasinullah for training. “ Before joining the training in 1999, I had done FA and was running a small medical store,” says Hasinullah. He claims that presently livestock animals are healthier than ever because of a number of initiatives. These initiatives, taken jointly by the community and project, mostly through the LEW, include introduction of better breeds and improved varieties of fodder, concentrates and mineral feeding to animals, deworming, timely vaccination and improvement of management practices.

The backyard poultry units, an essential ingredient of every household in the village, have also been improved due to introduction of new breeds and vaccination against New Castle Disease that used to wipe out chicken every year. The organization also helped two community members, Bahadar Zaib and Siraj, set up small farms. Both have now grown into quite large farms of 4000 chicken each. “Now we get chicken in our villages at a rate which is far less than the market price,” says a jubilant community member.

The village of Samang has communal oak forests though there are no conifer trees any longer. Five years ago, no undergrowth was left in these forests due to unrelenting and unsystematic grazing that led to a very high level of soil loss. Collection of oak firewood had further accelerated loss of fertile soil. The situation had become untenable already as, unlike most other villages in the valley, forest in Samang was not able to fulfill the local requirement.

The DKP brought a new consciousness about the forest conservation and provided the communities with the tools to take action. The village put a quarantine on a good part of the oak forests. After four years of quarantine, these forests now present a picture of regeneration. The new oak plants are appearing and herb and shrubs are thriving once again. The villagers have also moved to plant a large number of trees in the areas that were cleared of forests long ago. For the purpose, many farmers have set up nurseries with the help of the project. The organization has so far planted no less than 67,000 plants.

The efforts to save forests have been augmented with the measures aimed at soil conservation. The Samang organization has undertaken a number of bio-engineering measures for soil conservation. These include check dams, contour trenches, planting of various grasses and planting of multi-purpose trees.

The village has also developed a system of surveillance to safeguard the forests and have devised rules for its sustainable use. Those found flouting these rules are fined and this fine is given as reward to those who catch the offender. "This has turned us all into cops and the few culprits are in trouble," quips Johar Ali, General Secretary of the Samang Development Organization.

"We are proud to have covered so much ground," says Johar Ali, the General Secretary of the Samang Organization. "Now we are a thriving community, which has a lot to look forward to. We have achieved all of this because of Dir Kohistan Project."

## **From Darkness to Light**

“We were in darkness, now we are in light.” For ninety-year old Zeest Shah, a resident of Bari Kot village in Dir Kohistan, electric bulb is a new experience, an experience that redefines his life and radically enhances its quality. “Dark nights used to turn me into a cripple, making me totally dependent on others,” he says with a toothless smile. “Now I can move about and do my work like a teenager.”

To most residents of the remote valley, electrification of the area appears a miracle, a dream come true, as they did not even hope to get electric bulbs, televisions and washing machines within a foreseeable future. What is most important, they feel proud at the fact that they generate the electricity themselves and are responsible for its distribution and revenue collection.

When Dir Kohistan Project carried out a diagnostic survey in 1997, it was found that only 8 percent households were electrified from the national grid and a local power station managed by Sarhad Hydroelectric Development Organization (SHYDO) at Thal. The survey noted that immense water resources in the area were under-utilized and suggested its sustainable use for development. Later a study was carried out to find out the feasibility of Micro Hydropower Stations (MHPs), for which technical services were hired from Agha Khan Rural Support Programme (AKRSP) in Chitral. The study identified no less than twelve sites where MHPs could be set up without much difficulty.

The initiative for setting up Micro Hydropower Stations started with a 50 KW power station in Jandrai, which was built by the village organization of Roh Themil. The project, like other initiatives of DKP, adopted a participatory approach. The Power Station costed a million rupees, out of which community contributed 30 percent while

rest was borne by DKP. Purchase was done jointly by the project staff and the community members, while construction work was supervised by the village organization itself and much of the construction activity was carried out by the community members. The powerhouse lit up no less than two hundred houses in the area.

The second Micro Hydropower Station was set up at Biar village where initiative was taken by the Kheyber Village Organization, which joined hands with three other organizations. The power Station electrified 90 houses, which later rose to 120. It can be noted here that construction in Dir Kohistan is not an easy job as construction machinery is absent and beasts of burden, like donkeys and mules, are not raised. People themselves have to carry all the material to the construction site on their backs. This requires a lot of dedication, particularly if the work is communal in nature.

The construction of the power station costed 1.1 million rupees out of which 300,000 was borne by the community. The village chose to inaugurate its electrification in a big way. A feast was arranged and people from other villages, project staff of the DKP as well as the government officials were invited to the event. The Power House at Biar created a great multiplier effect, mainly because of this event and also because of the location of the village, which makes electric lights visible to all travelers passing through the area.

A survey has revealed that the micro hydropower stations became extremely popular in the valley after the installation of two power stations by the project. Since the year 2000, no less than 86 micro hydropower stations have been installed in 48 villages independently and many more are under construction. The generators set up independently and owned privately or by communities produce a total of 1072 KW of electricity.

The installation cost of a private power station ranges between Rs.6000 to 500,000, depending upon the generator's capacity to produce power, quality of the construction of the powerhouse and the power channel. Their generation capacity varies from 0.5 KW to 30 KW. The number of households benefiting from a single power stations vary from 75 to 200 household.

The installation and operational mechanism of these power stations varies from community to community. In most cases, communities bear the installation expenses jointly. In some cases, however, a single entrepreneur or a group of entrepreneurs bear the expenses and then sell electricity to community members at extremely reasonable rates. In Siasan valley, for example, 8 household joined hands to set up a small power station at a cost of 75000 rupees. In Bari Kot, an entrepreneur, Gul Sahibzada has set up an MHP and is selling electricity mainly to people who want to use it for commercial purposes.

This trend has been made possible mainly because of the capacity building of the community and a direct helping hand from ERNP-DKP, which has trained locals in the art of establishing power stations and running them. The local technicians trained with the project have played a major role in installing new private power stations. In many instances, groups of people invoke the technical help of the project for setting up a power station. Such a call for help always gets a positive response from the project.

DKP, on its part, has supported village organizations set up power stations that are owned and operated by the community. In fact, there has been a tremendous demand from the community to set up new power stations. So far project has supported 16 organizations set up their own MHPs. These MHPs have a generation capacity of 844 KW and they have benefited more than 3600 households.

As the operation, maintenance and marketing of the electricity is the responsibility of the community, the DKP found it important to train the locals as technicians and operators. Local apprentices were involved in the process of installation of power stations and operators selected by the village organizations were also trained by the project.

The project has also trained the management and maintenance of the power station to the community and has also taught them how to run the process of distribution of electricity and revenue generation efficiently. The village organizations have formed committees to oversee the work of the operator and to collect bills. Before a power station becomes operative, communities are required to agree on the terms and conditions of using electricity. To avoid making excessive use of electricity that could harm the system, community members are required to install tube-lights instead of bulbs and have to use installations requiring high voltages in consultation with one another.

The electricity generated through MHPs is extremely economical. A user normally contributes twenty to forty rupees a month, which not only covers the running cost and salary of the operator, but leaves some money for the future requirement of maintenance. For example, when generator of the Maina Taraqiati Tanzeem at Dok Dara village went out of order, the organization was able to get it fixed by spending 30 thousand rupees from its own sources.

Compared with the electricity supplied by WAPDA from the national grid, the electricity produced by MHPs is twelve times cheaper. This, according to an estimate means a saving of 28.8 million rupees for the Dir Kohistan valley. The use of electricity generated by MHPs, therefore, not only improves the lifestyle, but also helps alleviate poverty by decreasing expenses incurred on lighting the house at night. "Carosene oil is 25 rupees for a liter and I used spend 400 rupees on it every month," says Qari Rahatullah, a teacher. "Whatever money is saved, I spend it on my children," says Rehmanuddin, a farmer.

The electricity has also contributed to improving public health in Dir Kohistan. Since carosene oil was too expensive for most residents, they used torch-wood, locally called *Shontai*, for lighting purposes. The *shontai* was normally taken from Deodar and there

were serious health hazards attached to its use. “Our houses were full of smoke during winter and we used to get sick too often because of constant inhaling of smoke,” says Mohammad Ayub, a community member in Kalkot.

Use of torches made houses dark with carbon and difficult to keep clean. It was virtually impossible to study or carry out any activity in the light of the torch-wood. Not only this, use of torchwood resulted in dozens of serious incidents of fire during months of winter. Barns were particularly susceptible to catching fire and this often resulted in serious economic losses to people.

Due to substitution of torchwood with the tubelight, the burden on the forests has decreased tremendously. The torch-wood is extracted from the butt-end of precious Deodar (*Cedrus Deodara*) tree. On average two households use one tree per year. Many locals believe that electrification alone has decreased the use of forest resources by a third. “Nothing has helped save forests more than electrification,” says Gulnoor Shah, a well-known forestry rights activist in the area. MHPs have also helped agriculture production in the area as the water channels prepared for the power stations also used for irrigation.

Electricity has redefined life for everyone and provided a boost to economic activities in the area. “We used to disappear into our houses at dusk”, says Shah Sultan, a teacher. “Now markets remain open and we keep working till late at night.” Shopkeepers and artisans are particularly happy that they could continue their business beyond the sunset.

Electricity has helped the cause of education by providing students with the means to study at night. Syed Badshah, a BCS student studying in Peshawar says he used to be afraid of spending his holidays in the valley because he could not study at night. “Now I bring my computer with me and study as much as I like,” he says.

Perhaps no one has benefited from electrification more than women of the valley. Now they can work at a time of their own choice and can move at night comfortably. As carbon soot from torches used to darken the walls of the houses every winter, women were required to plaster their houses with mud every autumn, which required weeks of tough labour. This is not required any longer as houses don't get blackened with carbon soot. Women also spend less time on collecting fuel-wood. Washing machine and other electronic devices have taken off a lot of burden of their work and radios and televisions have brought them entertainment.

Perhaps what is most important of all, maintenance of MHPs has promoted cohesiveness and unity among the people and enhanced the participatory decision making process. Besides the management and financial skills of the communities have improved through these practices.

## **Me and My Cattle**

As snow thaws and spring flowers bloom in Dir Kohistan valley, groups of nomadic shepherds arrive in hundreds, bringing with them thousands, perhaps hundreds of thousands of cattle. For more than half of the year, alpine pastures of the valley provide refuge to these nomads and their animals. They are joined by local residents and their cattle.

Livestock is integral to culture and economy of the valley. Livelihood in Dir Kohistan depends on a mix of farming and cattle raising. Ownership of livestock is a symbol of security, prosperity and prestige, and they have a great symbolic value. Animal sacrifice announces formation of bonds of friendship, end of old rivalries, birth of an heir and formation of new familial bonds. Not only this. Animals unite man with God, as their sacrifice for religious reasons is considered a very high form of piety.

Cattle are an important source of nutrition. In bitter months of winter, when no vegetable can be grown, reliance on meat and milk-products becomes crucial. They are also an important source of cash for the area that still remains a subsistence economy to a large extent. Cash strapped farmers sell milk products, meat and hide throughout the year, while extra animals are sold outside the valley on the eve of Eidul Adha.

Cows and goats are the most popular animals in the area. Cows are main milch animals, while goats are kept to fulfill the requirements of milk and meat. Sheep, though raised in small numbers, are valued for wool and meat. A small backyard poultry unit is considered indispensable for day to day needs of eggs and meat and for entertaining

guests. No wonder every Kohistani owns 4 to 6 sheep and cattle and one to two cows. Every village has 5 to 6 herds of sheep and goat, each herd consisting of 100 to 250 animals.

For nomadic Gujars, one of the three ethnic communities residing in the area, cattle mean much more as their whole life is dedicated to raising cattle. They spend winter with their cattle in the plains of Punjab and NWFP in winter and summer in the alpine pastures of Dir Kohistan and other mountainous areas.

In June 1997, before the ERNP-DKP was formally started, a diagnostic survey was carried out. The survey found that the incidence of livestock and poultry diseases was very high in the area, there was lack of veterinary facilities, productivity of the livestock and poultry breeds in the area was very low and fodder was neither enough nor of good quality.

Before ERNP-DKP, the facilities for animal husbandry were almost non-existent. Though government had set-up basic veterinary facilities at three points i.e Sawni, Patrak and Thal, these were almost non-functional. "There was no way to treat a sick animal," says Sharfuddin, a community member in Kalkot. He adds: "As no medical help was available, and very costly when available, we used to call a maulvi (religious practitioner) to exorcise the sick animal and pray for its health. We also used to carry out superstitious practices that often harmed than helped the poor animal." Some of these practices put the health of the animal at a serious risk. For example, tempony, in which animal's stomach is filled with air, was treated by cutting an ear of the sick animal.

In absence of preventive or curative veterinary facilities, disease outbreak was very common and at times reached the proportions of an epidemic. As the project aimed at improving people's socio-economic condition, it was considered important to improve situation of the livestock. A number of interventions were planned, but at the centre of all the activities was a plan to train local educated people in the art of animal husbandry and turn them into Livestock Extension Workers. It was hoped that this community based training programme will develop human resources and once trained, these LEWs, as they were termed for convenience, would teach better livestock management skills to the farmers and provide veterinary services to the farmers at their doorsteps. .

The rationale for such a training programme lies in the fact that ERNP, unlike many conventional projects, does not rely on transfer of capital and technology alone to achieve objectives of the project. It places heavy reliance on building social capital for sustainable development at the grass root level. Such capacity building is crucial to protect environmental rehabilitation, as distant policy makers can not prevent environmental degradation. Therefore, it is necessary to make investment in building the capacity of local institutions by equipping the selected community extension workers in relevant technical and managerial skills.

ERNP-DKP has prepared a comprehensive Strategy for Training to deal with the challenge of training requirements of the programme. One component of the strategy

deals specifically with capacity building of local communities. The strategy aims at upgrading knowledge and skills of communities for increased agriculture and livestock production and reduce wastage. It aims to produce a cadre of extension workers who could provide services and training to the local communities in the technical areas.

LEWs were selected by village organizations, which looked at their education, past experience and their commitment to serve the community. The nominated persons were interviewed by the project staff and were required to sign terms of partnership. “I was selected because people of my village were aware of my interest in animals and knew that I could serve them well if I got a chance for training,” says Layaq, who was selected by the Taraqati Tanzeem Dad Bantr and now runs a veterinary facility in Beyar village. He holds a Higher Secondary School Certificate. Ehsanuddin, an ex-army soldier was also selected because of his reliability and interest in animals.

The selected candidates were sent to Animal Husbandry In-Service Training Institute (AHITI) in Peshawar where they underwent rigorous training for 21 days. After working in the field for six month, each LEW was called again for another session of 21 day long training at AHITI. The Project continuously arranged training courses for LEWs at its field office in Sheringal.

The Extension workers are regularly monitored and their progress is followed by the Assistant Director Livestock and the relevant staff at the project. They are required to keep records of their services and send monthly reports of their progress.

All LEWs are intimately involved in livestock related project interventions. These LEWs have made a name for hard-work and each of them provides services to an area that could range from 5 to 15 kilometres in radius in an extremely difficult terrain. An LEW normally earns 1500 to 2500 rupees a month, which is considered a good income in the valley.

The first thing the LEWs had to concentrate on was to teach the community members the skills of better livestock housing and management. The extension workers have played a vital role in teaching modern skills of livestock management to the community members. “There was no concept of livestock housing and management. Animal houses were unhygienic and no arrangement was made for ventilation. Not even a small hole was made in the animal house for the purpose. The gases inside the animal houses made animals sick with tuberculosis and other diseases and many of these could be transferred to the humans.

The project did not stop at giving verbal advice to the farmers, but constructed dozens of improved animal houses to demonstrate to the farmers what kind of housing was best for the animals. These animal houses and the constant advice from the LEWs have changed the situation radically and now farmhouses are constructed in line with modern practices of livestock management, leading to better health for animals and humans.

One cultural problem facing the project was the fact that the locals took pride in numbers of their animals rather than their quality and productivity. As the facility for veterinary care were absent, farmers wished their animals to be tough enough to survive the harsh weather and recurrent disease and that too on an inadequate diet. This resulted in low productivity among animals while putting enormous burden on pastures and environmental resources.

The Natural Resource Management Strategy of the ERNP emphasized the need for improving the genetic quality of stock that could have a dramatic impact on productivity of the animals. It was realized that if farmers could be convinced to keep better quality animals in less numbers, it would not only be more convenient and productive for them but may also lessen the burden on rangelands and forests.

This message was communicated to the locals through LEWs and they claim that it has been received very well by the community members. “Now there is a growing demand for better quality animals and people now talk about the quality of their animals rather than their numbers,” says Ehsanuddin, an LEW.

In order to improve the genetic quality of the livestock, the project has introduced stud bulls and rams into the area, which have set in motion the process of genetic improvement of the livestock. This action was considered even more important as introduction of farm machinery has resulted in reduction of bullocks leading to shortage of breeding males. “We tell the farmers that good management of the livestock is all important and it is better to keep animals in less number. What is more important is to make sure that they are more productive and of good quality,” says Hasinullah, an LEW in the village Samang.

Much like humans, health of animals, to a large extent, depends on the food they are fed on. In Dir Kohistan, animals are fed on forage that is deficient in protein and other important nutrients. Grass is the major source of green fodder during the spring and the summer, while winter fodder includes hey, maize stover and wheat straw. This stoic food makes animals lean, decreases their capacity to yield milk and meat and makes them susceptible to various diseases.

The project has taught the communities how to dry grass in a way that it retains its nutrients. It has introduced new varieties of grasses, like mott grass, that could be harvested three to four times a year without the need for sowing it again. The project, through LEWs, has also taught urea treatment of hay and dried grass that makes the food more nutritious and appetizing to animals. It has taught them how to store fodder more efficiently. LEWs also teach farmers how to feed their animals extra nutrients to improve their health.

An important achievement of the project, attained through LEWs, is introduction of preventive medicine for animals in the area. “The farmers had no concept of preventive medicine,” says Layaq, an LEW. “They did not even know that animals could be vaccinated against major diseases.” Farmers had to pay dearly for lack of vaccination

facility for the animals. As there was no vaccination for diseases like Foot and Mouth and Black Quarter that killed hundreds or perhaps thousands of animals every year. At times, these diseases could spread like an epidemic, wiping out herds and playing havoc with livelihood of the people.

Now vaccination has become widely popular in the area, bringing an element of security into the livestock economy. “This year 1700 out of some 3000 animals in this area have been vaccinated already,” says Layaq. Some LEWs have in fact gone a step forward and introduced vaccination for sheep pox and cow pox on their own. Vaccination has also helped poultry sector in the area where vaccination is considered crucial. Now the locals make sure to vaccinate their chicken against the New Castle Disease that used to wipe out flocks every year.

De-worming of animals is also a new concept in the area spread through LEWs. As animals are susceptible to a number of worms that weaken them and make them a risk for human beings, to whom these worms can be transferred through their milk, meat and dung. “Now farmers routinely use, anthelmintics, medicines for de-worming, and know that they are good for health of the animals as well as humans,” says Ehsanuddin, an LEW.

LEWs have also been trained in diagnosing and treating major diseases among animals. Farmers employ a number of strategies to get their help. They bring their animals to the LEWs. If they are situated at a distance, they ask for advice on the telephone or pay a visit to the LEW to explain symptoms and get medicine. At times, they take LEW with them to the animals in other villages or alpine pastures where LEW inspects the animals and suggests a suitable medicine.

Gujars, the nomadic herdsmen, who are considered a marginalized ethnic group in the area have benefitted the most from the intervention. “It was impossible for us to take a sick animal down from an animal pasture to a veterinary facility,” says Saleem Gujjar, a nomadic herder. “Now we can call an LEW whenever we find something serious with the health of our animals.” “Gujjars consider me their best friend,” says Ehsanuddin, an LEW. “And much of my business in fact depends on them,” he adds with a smile.

The LEWs have networked with senior veterinarians on their own to get advice when required. “We get consultation with doctors in Peshawar if we find an unusual disease, says Rahman Shah, an LEW in village Doro.” He says he feels very confident in diagnosing and treating common and contagious disease but may need help sometimes in treating a less common individual disease.

Chicken is considered as a major and easily available meat source for home consumption, celebrations, entertaining guests and small cash flow in the area. Small flocks of 6 to 10 birds per household are a common feature in the valley. Poultry raising and poultry farming has also benefitted immensely from the project. “We have not only introduced new varieties but also distribute vaccines and tell people how to save their poultry from the disease,” says Said Mohammad Jan, an LEW in village Bela.

The improvement of the health and well being of the animals has improved the situation of livelihood in the area. Large number of low quality animals meant more work for women for less economic gains. The new system of livestock management means less burden of work for women, because now cattle owners like to keep small number of productive animals. Increased productivity of animals also ensures better nutrition for the household, benefitting children and women.

Smaller number of animals also means less burden on pastures and natural resources of the area. Introduction of better grasses and promotion of stall feedings has also lessened burden on the forests, pastures and rangelands, thus helping improve the situation of environment.

“We are tied to our animals,” says Hakeem Saeed, a farmer in the village Biar. “Their health and well being is our health and well-being. I am pleased that DKP has helped us by helping our animals.”

## **Winds of Change**

“The forest here was so thick that you could not see the sky,” forty five year old Abdul Mateen Khan says gesturing to a bare mountain scarred with signs of persistent landsliding. He continues: “On a cursed day, our elders decided to clear cut the mountain to make way for terrace fields. The crops grew for three years only and then the whole mountain became unstable and turned into a monster. We lost both the forest and the fields”. Deprived of an important source of livelihood, now the residents of Mangala village in Dir Kohistan live in constant fear of a landslide that could wipe out their houses and obliterate their fields.

The story of Mangala is a classic tale of nature taking revenge for overstepping its limits in a fragile mountain eco-system. On a lesser scale, the story of Mangala was the story of every other village in Dir Kohistan before DKP arrived on the scene. However, the most worrying thing was the fact that residents in most villages could not see an imminent threat to environment and livelihood and, as a consequence, there was no felt need for safeguarding the forests. Forest resources were being exploited so excessively that threatened their existence.

The residents of Mangala, and some other villages which were living on the brink, were quick to jump on the opportunity to join the struggle to rejuvenate their forests and revive their environmental assets. Other villages learnt by example and cautiously joined in as the project staff tried to raise the level of their awareness and shared with them the examples of places like Mangala. Thanks to their untiring work, today a movement is born in the valley and a massive struggle is on to save the precious forests for the present and the coming generations of the area. .

Forests constitute the biggest and most important resource in the valley and are integral to Kohistani culture and mode of livelihood. They play a vital role in the economy of area as a source of timber, fuel-wood, non-wood products, forage and grazing. The importance for forests as a source of non-wood products can be estimated from the fact that collection of wild mushroom, locally called Goochi, alone provides self-employment to thousands of Kohistanis who sell it for as much as 8000 rupees for a kilogram. In village

of Siasang, for example, some 250 persons earn much of their income by collecting mushroom.

The forests in Dir Kohistan are mostly 'Dry Temperate Mixed Coniferous' type having deodar, blue pine, chilghoza, spruce and alpine scrub. These forests are an integral part of country's watersheds and play an important role in the environmental integrity of the areas downstream.

The locals lived in harmonious relationship with nature till the valley opened to the outside world in the 60s and government started harvesting the forests at a commercial scale. Some local influentials co-opted with the contractors and soon a pattern of excessive and illicit cutting was set in.

Increasing population coupled with changed patterns of consumptions have also played an important role in increasing demand on forests which have burdened beyond the regeneration capacity. The measures taken by the government, which saw the local populations as prime threat to forests, often exacerbated the situation. Rights of people were virtually suspended as the government imposed more and more restrictions from time to time.

As a result people lost interest in the welfare of these forests and adopted an attitude of apathy and indifference. Since people were left without any stakes, they looked the other way even as the forest mafia preyed on the forest. It was feared till some years ago that they may disappear altogether from Dir Kohistan within a couple of decades.

The forest related policies of the government not only pitted people against the government, but also created resentment against all outsider. "We in fact started feeling that all outsiders came here only to steal our forests." says Fazlur Rehman, Naib Nazim, union Council Patrak. This suspicion of and resentment against outsiders was not without implications for the project. The project was looked upon with suspicion in the beginning.

Oak tree in Dir Kohistan is used for fuelwood, fodder and domestic requirement. Oak is an important source of fodder in winter when its green braches are lopped off as a regular practice. The twigs, not eaten by the cattle, are used as fuel-wood and for thatching. Oak grows extremely slowly and viability of its seed is also very short. Overgrazing of oak forests has badly affected germination as well as survival of young seedlings, taking away its chances of regeneration. As no leaves are left over to decay, humus is lost and the existing soil fertility is decreasing fast.

DKP has made communities realize the importance of oak management and has made a vigorous effort to revive indigenous forest management system. Communities were trained how to put quarantine on oak forests for a period of four to five years. This has had an immense impact on the oak forests as quarantine gives seeds a chance to grow and grasses, herbs and shrubs take a new lease of life. Such a quarantine revives wildlife

habitat, controls soil erosion, increases water absorption, conserves biodiversity and increases fodder and fuel wood supply that reduces pressure on conifer trees.

As number of livestock animals in the area is very high, a strict system of watch and ward is important to protect the oak forests. Communities have evolved a participatory system of surveillance to guard the strategic points and people are rewarded for apprehending a person who does not respect the quarantine. This has proved extremely effective in safeguarding the forests.

As the next logical step, saplings have been planted wherever trees were missing. Plants have been raised in the project nursery at Sheringal and the community members have been facilitated for setting up nurseries on their own. Through these nurseries, project has succeeded in transferring the technology to local farmers for sustainability of planting process and has ensured the availability of plants at local level for plantation. These nurseries have produced hundreds of thousands of plants, most of which are now turning into trees at private and communal lands.

Free grazing has been banned in the areas of new plantation, which not only saves new plants but also helps bio-diversity. In areas of oak forests, social fencing and closures have been created. In fact, there has been a healthy competition between the villages to regenerate their forests. Dad Banr and Shal Banr, two villages in the valley, have led the effort by 52 thousand and 40 thousand plants respectively.

Soil erosion is a serious threat to forests in the area. Wherever trees have gone missing, the fertile soil is eroding fast. Excessive cutting has in fact made parts of mountains unstable. When it rains, it leads to land-sliding and flash floods. The best way to counter this situation is through building check dams as bio-engineering measures are most suitable to control this situation. These measures involve construction of check dams, protection bunds and diversion channels as well as planting of various grasses and trees.

Check dams help accumulate soil on which plantation can be made and the whole areas of the mountain becomes stabilized. "We feel much safe after construction of check dams in our area", Says Shah Sultan, a teacher in Bari Kot. He remembers how in 1996 floods hit the area destroyed crops and washed away houses. In fact these measures have helped protect fertile land from being washed away by floods and conserve soil by minimizing flash floods, increase water absorption capacity of soil and safeguard against landslides, reduce intensity of floods and protect human life as well as valuable infrastructure and maintain soil fertility.

These changes have been accompanied with and resulted by a change in attitude. "It was very difficult to take care of a tree because vandalism and carelessness was rampant. Now we have planted 27 thousand plants in our village and most of them have survived," says Fazlur Rehman Naib Nazim Patrak.

The project has undertaken several interventions in the forests including planting and check damming. However, the main focus has been on awareness for resource protection. The results of these efforts are obvious in the actions undertaken by the community.

In Barikot area, for example, about 20 village organizations have formed a forest protection committee. This committee has banned cutting of green trees and conversion of forest area into agriculture land. The committee makes regular inspections of the forests in the area to detect violations.

In Kalkot area, the community has established a *Qaumi* (Community) Check Post to guard against illegal movement of timber from Kalkot, Thal and Lamotai valleys. Following the example set by Kalkot, five more check posts have been set up by different communities for curtailing the movement of illegally harvested timber. The community in Kalkot has also been able to resolve the longstanding dispute with royalty purchasers, canceling all deals made for sale of forest to outsiders. This is indeed a big step for forest conservation.

Several other communities have imposed ban on cutting of conifer trees for burning, while others have initiated complete closure of depleted forest against timber, firewood use and grazing.

People in Dir Kohistan used to look at forests as an endless resource. Due to educational activities of the project, now people realize that forest is a dwindling resource that must be saved for the coming generations. “ People used to cut green trees for fuelwood,” Amanullah Khan, Nazim, Union Council Dok Darrah. “But not anymore. Now people cover long distances to find the windfall to use them for fuel,” he says. Most villages have in fact formed committees to regularize the use of forest resources. People have to take permission from the committee to take wood from the forest. Most villages have also banned conversion of forest lands into fields.

Other elements of the project have also helped save the forests. The installation of micro-hydro power stations have particularly relieved pressure on forests for torchwood. Because of construction of new roads, it is easy for farmers to bring windfall from the forest, thus saving lots of green trees. The new sources of livelihood and improved income generation have also helped relieve pressure on the forests.

Dependence on forests for livelihoods is now shifting. Improved agriculture and livestock has brought hope for sustainable means of livelihood. What is most important, people have realized the importance of saving their forests and are making efforts for that end. Abdul Mateen Khan, the President of Mangala Development Organization, believes that the story of his village will not be repeated in Dir Kohistan—because of ERNP-DKP.