

DRAFT

NATIONAL RANGELAND POLICY

**GOVERNMENT OF PAKISTAN
MINISTRY OF ENVIRONMENT**

JANUARY 2010

TABLE OF CONTENTS

1. BACKGROUND AND CONTEXT-----	03
2. HISTORICAL PERSPECTIVE-----	04
3. BASELINE SCENARIO -----	05
4. KEY THREATS TO RANGELANDS-----	05
5. RATIONALE FOR THE RANGELAND POLICY- -- -----	06
6. VISION-----	06
7. GOAL-----	06
8. OBJECTIVES-----	07
9. POLICY THRUSTS-----	07
9.1 Rangeland resource assessment and monitoring-----	07
9.2 Collaborative and integrated rangeland resources planning-----	07
9.3 Rang resource rehabilitation and management-----	08
9.4 Increase forage availability on other land use-----	10
9.5 Promotion of rangeland enterprises-----	10
9.6 Management of rangelands for regulating sustainable water flow and reduced sediment production -----	11
9.7 Ecosystem rehabilitation for biodiversity conservation-----	11
9.8 Mitigation of the impact of global warming and climate change-----	12
9.9 Awareness raising about the significance and management of rangelands -----	12
9.10 Skill enhancement of the farmers and capacity building of the related stakeholders-----	13
9.11 Applied range research and technology development and transfer-----	13
9.12 Financial resource generation-----	14
9.13 Coordination and linkages development-----	14
10 INSTITUTIONAL ARRANGEMENT-----	15
11 FINANCIAL IMPLICATIONS-----	15
12 LEGAL ASPECTS-----	16
13 MONITORING AND EVALUATION-----	16
14 RISKS-----	16

NATIONAL RANGELAND POLICY, 2010

1 BACKGROUND AND CONTEX

Rangelands play a significant role in the livelihoods improvement of vast number of rural poor and disadvantaged people through rearing of animals and obtaining a variety of products and services. In addition, rangelands also play key role in enhancing infiltration process, leading to sustainable water flow in the down streams, and reduced soil erosion. These are also contributing to the ecological stability to some of the important ecosystems of the country.

The livestock sector's contribution in the GDP is more than 11 percent. The recent statistics show that the total number of livestock in the country is in the tune of 154 million benefiting around 35 million people earning around 40% of their income from rearing of livestock. From the rangelands more than 60% livestock feed requirement are met. In this case, the significance of the rangeland is high in various parameters encompassing ecological, social; and economical.

The Rangelands cover more than 60% of the total area of the country. It has a vast spread starting from the northern part of the country and extends to temperate and Mediterranean ranges in the western mountains. This also covers a considerable part of the Indus plain. The climatic conditions vary across the whole length of the country from south to north. The main contributing factors for these variations are the altitude, and extent of the winter and monsoon rains. The elevation ranges from sea level to around 7500 meters in north. The northern part receives more than 1500 mm rainfall, while it gradually decreases and reaches to the minimum in the south upto less than 100 mm. The northern parts falling mostly under dry and moist temperate area; where in the moist temperate zone there is more rainfall and less snow, while in the dry temperate areas, there is more snow and less rainfall. The vegetation also developed in response to the climatic conditions. The pastures and rangelands in the northern parts are more productive than those in the central, western and central parts of the country.

The total geographical area of Pakistan including Azad Jamu and Kashmir and Gilgit-Baltistan is 88 million hectares. Major portion of the total land falls under the rangeland category. These are the areas which by physical limitations such as low and erratic precipitation, rough topography, poor drainage or cold temperature are unsuited for cultivation, but are more suited for forage production. In other words, these are the lands on which the native vegetation is pre-dominantly grasses, grass like plants, forbs, or shrubs suitable for grazing or browsing. Rangelands include; natural grass lands, savannas, deserts, tundra, alpine plants communities, costal marshes, wet meadows, and introduced plants communities managed like rangelands. Over 52.2 million hectares land is classified as rangelands. Out of this 18.5 million ha is considered to be productive and can be used for grazing.

Rangelands provide feed to livestock, however due to the increase in population pressure there is corresponding increase in the demand for food and energy, the need for forage and other resources will also increase. In addition as major source of forage for the livestock, ranges provide water, recreation, wildlife, and fish habitat.

The extent and the spread of the resource are high and diversified compared to other renewable natural resources. Some of the ranges are also scattered within the forest areas, which are the result of deforestation over the past. These ranges are generally situated in fragile ecosystem, where the habitat is under heavy grazing pressure and over time the productivity and bio-diversity has declined. The negative impacts of the mismanagement are evident in the form of accelerated soil erosion and land degradation, reduced biodiversity, besides an overall reduction in the productivity. Most of these lands are communal, and therefore management decisions lie with the whole community. Other major problems in range management are; land tenure; overgrazing, non-uniform grazing, free access to the surrounding forests, accelerated erosion, and spreading of weeds, while the major social issue is the non equitable distribution of benefits, as there is no restriction on the number of the livestock to be grazed on the communal rangelands. This leads to the exploitation of the resources by few influential individuals.

The current government attaches high priority to the proper management of the rangelands, they are fully aware about the significance of the rangelands, Therefore the attention of the politicians and policy makers is to focus on the sustainable rangeland development and management to derive various benefits as per following three main reasons; first they form the headwater environment for the major river systems in the country, which has an important positive impact in or downstream for millions of people, who are basically engaged in agriculture. Secondly the products obtained from the rangelands-livestock and plants and their byproducts-contribute towards food security to the especially to the vulnerable households by providing income generation opportunities. Thirdly, the rangelands have a significant role in biological diversity besides providing habitats for numerous wild animals.

2 HISTORICAL PERSPECTIVE

Since the creation of Pakistan a strong need was felt to formulate a comprehensive National Rangeland Policy in the overall framework of the sustainable natural resource management. However, inspite of the high significance of the range resource and the need to develop a policy or strategy, very little has been done so far, and at this moment, Pakistan does not have any policy. Though we do not have a policy, but number of recommendation have been made over the last sixty two years, which are summarized as follows;

In 1965 and 1971, the CENTO Range Team recommended the formulation of a National Range Policy. Similarly the Pakistan Range Management Conference held in 1966 recommended the involvement of livestock producers in formulation of Range Policy and the creation of Grazing Advisory Committee at province, division and district levels to provide input for the National Rangeland Policy and also to implement the major decisions. As a follow up, in 1970 the “Working Group on Range Management” elaborated the key policy guidelines for implementation and formulation of the national rangeland policy. These guidelines entailed that all the rangeland will be managed primarily for livestock production in conformity with the multiple use concept; ban on shifting cultivation, and involvement of the key stakeholders.

Conventionally range management used to be dealt as a part and parcel of the forestry sector, therefore the Ministry of Environment in its National Forest Policy 2009, has included in Chapter 6 the required measures and the required directives in Rangeland and desert ecosystem related to sub-alpine and alpine rangelands and meadows, semi-arid and arid rangelands and desertification. This is a good move towards integration of the rangeland resource with the forestry sub-component. In 2006, National workshop in

Islamabad on the Rangeland management, supported by ICIMOD strongly recommended the formulation of a National Rangeland Policy after the baseline study is conducted.

Similarly, the need for the formulation of a National Rangelands Policy was also felt by the Ministry of Environment to comply with the " Prime Minister Task Force on Food Security" 2009. As a follow up on the main recommendations of the taskforce report, the federal and provincial authorities agreed to have the Rangeland baseline conducted and national level policy formulated. Thus it is very much clear that the current government is keen in formulating a national rangeland policy for the sustainable development of the natural resources and improvement in the livelihoods of millions of rangeland dependent communities.

3. BASELINE SCENARIO

Current policy is based on a comprehensive baseline study recently(2010) undertaken by the Ministry of Environment to know the current condition and the trend of the rangelands compared with their potential, and identify various gaps to be addressed in the policy. The baseline results show that there is an obvious downward trend in the overall productivity of the rangelands besides significant reductions in the overall functions and services. The baseline analysis shows that the current productivity of the majority rangelands varies from 25-50% of their potential. In addition, due to overgrazing, the species composition of a given ecosystem has changed in the favor of non-palatable weed species to the extent of more than 40%. These include invasive species as well. The foliar cover of the majority rangelands has decreased upto 27% of its potential, thus resulting in low productivity as well as contributing to high soil erosion rates. The spread of weeds and toxic plants has increased upto 30%.

Due to the climate change and other biotic factors, desertification of the range resources is taking place at an alarming rate especially in the arid and semiarid zones of the country, which constitute 43.3 million hectares, i.e., 83% of the total area of rangelands. In addition the degraded rangelands have negative impact on the wildlife, as majority of their habitats are occupied by the grazing animals besides high competition for feed.

Regarding the management aspects the current management system is not appropriate, as less attention has been paid to control grazing and more focus on some costly and non-sustainable range improvement interventions. In spite of the diverse nature of the resource and a variety of potential benefits, there still exist a narrow focus of management and the whole sector is revolving around the livestock only, while ignoring the associated benefits and services. In addition, the existing institutional set up for the management of rangeland resources is in-appropriate and less attention is paid for the proper management of this huge resources

4 KEY THREATS TO RANGELANDS

The main reasons for this deteriorated condition are the increased no of livestock beyond the carrying capacity, improper land use and mismanagement. The increased human population pressure also affect the rangeland by converting rangelands to agriculture, and forest lands, soil erosion and degradation. The overgrazing has also resulted in the species composition towards less palatable forage species including the wide-spread weed and poisonous plants in a number of range and pasture ecosystem. The other

contributing factors are climate change and global warming. Resultantly desertification and decline in bio-diversity are common phenomenon.

The land tenure is also a crucial issue in sustainable rangeland management. Majority of the rangelands are communal lands, and generally there is no collective and systematic approach for their management, and the tragedy of common prevails.

The heavy dependency on the rangeland for the livelihood of the poor people also put the resource under threat as the growing demand for products and services can be met with the current level of production without reinvesting additional and bringing improvement in the overall management. This has resulted in the degradation of the rangelands in terms of products and services, and will continue is a threat.

Moreover, the current intuitional set up is more skewed towards management of the forestry resource rather than the rangeland resources. Moreover the rangeland management is seen in isolation with the other key components of forestry, agriculture and livestock itself, which are very much interdependent and require a holistic and integrated approach. This will be only possible if one will follow a farming system approach.

5 RATIONALE FOR RANGELAND POLICY

Due to the high significance of the rangeland and pastures due to the extent of the land area it cover, the multiple products and services, and the contribution of the resource in the sustainable livelihoods, and the deteriorating condition and downward trend of the resource, it is utmost essential to formulate a national rangeland policy. At the moment range and pasture resources are being governed by federal and provincial forest policy. This is a good on one aspect as it brings more integration amongst the various components of the natural resource, but has the inherent disadvantage of less focus and priority for this segment of the resource compared to the other components especially the forestry sub-component. Under these conditions it is considered more appropriate to have a separate comprehensive national rangeland policy which will create conducive environment. The time is appropriate at this stage, where the government attaches highest priority for the formulation of the national rangeland policy as recommended by the Prime Minister task force on food security. The policy document is also required to comply with the various UN Conventions including UN Convention on Biodiversity; UN Convention on Combating Desertification, and UN Convention and UN-FCC. The Policy will enable the government to be an active partner in fulfilling the objectives of these conventions and would try support from the international community for the improved range ecosystem and other interventions.

6 VISION

Rangelands of Pakistan are managed to potential productivity level , contributing significantly to improve living conditions of the dependent communities towards enhancement of livestock share in national economy besides maintaining ecological functions and mitigating impacts of climate change and loss of biodiversity.

7 GOAL

The overall goal of the national rangelands policy is to rehabilitate the degraded rangelands and pastures close to their potential for increased productivity enhance their environmental and regulatory

functions and services, increase and conserve rangeland biodiversity besides mitigating the negative impacts of global climate change through collaborative and holistic rangeland resources to contribute to the livelihood improvement of the rangelands dependent communities as well as to the national economy

8 OBJECTIVES

The main objectives of the policy include;

- To enhance the productivity and the related functions and services of the rangeland ecosystem
- To promote rangeland enterprises for the livelihood improvement of the rangeland dependent communities
- To conserve and maintain rangeland biodiversity
- To mitigate the negative impacts of global warming and climate change especially related to the desertification
- To enhance the skill and capacity of the key stakeholders for the sustainable management of the rangeland management
- To undertake applied and action research on the key problems of the rangelands

9. POLICY THRUSTS

The main thrusts of the policy are as follows;

9.1 RANGELAND RESOURCE ASSESSMENT AND MONITORING

9.1.1 Before planning conservation and development interventions, it is essential to have the baseline data regarding the extent of the resource, the location, the prevailing trend and conditions and careful analysis of the contributing factors. Therefore under the policy great focus will be given to this aspect.

9.1.2 Periodic range resource inventories based upon sound social, economical, and ecological principles in various ecological zones in the country will be undertaken. In these surveys certain indicators will be identified to track down the improvement or otherwise in the range condition and trends for subsequent monitoring. The data so collected will make a basis for future interventions aiming at sustainable rangeland resource management and conservation. This will help regular monitoring of the extent, the trend and condition of the rangelands including productivity, and productive services and functions both through regular methods as well as through satellite imageries

9.2 COLLABORATIVE AND INTEGRATED RANGELAND RESOURCES PLANNING

9.2.1 Institutionalizing rangeland planning based on the holistic and collaborative principles of natural resource management in the overall context of multiple land use. The planning will be initiated at

catchment or valley basis. In the planning exercise all the key stakeholders will be involved. The key objective of the Range Management plans will be to ensure sufficient quality forage availability around the year for both livestock and wildlife besides provision of other key rangeland products, functions and services

- 9.2.2 Collaborative and integrated rangeland management plans will be formulated indicating the priorities and interventions for short to medium and long term. In these plans a full description of the key parameters including the total production, the ratio between the palatable and non-palatable species, the foliar and basal cover, the appropriate grazing period, and the appropriate livestock kind and number will be indicated. The plans will also identify and estimates the key non-timber products to be obtained and their potential for enterprise. The integrated and holistic approach to the natural resource management will be followed in the planning, which will serve as a pillar for sustainable rangeland management. In this case, both formal and informal linkages with the related sections of the forest, agriculture and livestock departments will be developed for bringing more synergies amongst the various sub-components. In addition, farming system approach will be kept in mind, whereby a deep understanding of local needs and perceptions are fostered.
- 9.2.3 In these plans, the terms of partnership between the community organizations/grazing association and the forest department will be spelled out to ensure a balanced approach towards the rights and obligations by both parties regarding the resource conservation, development and utilization. The local communities will also be involved in the regular monitoring process.

9.3 RANG RESOURCE REHABILITATION AND MANAGEMENT

- 9.3.1 Local communities will be actively involved in the whole cycle of rangeland management including the formulation of the collaborative and integrated rangeland management plans, implementation and monitoring. In this case, the plans will be formulated on catchment/valley basis, while keeping into account the inter-relationship between various sub-catchments. These plans will be prepared on holistic basis wherein the whole farming system will be taken into consideration. These plans will be in local languages to be easily understood by the primary stakeholders. The plans will also explicitly spell out the rights and obligations of the various stakeholders
- 9.3.2 After a thorough review of the existing grazing system and pattern, a suitable rotational grazing system will be introduced. This system will be simple and close to the already existing rules and regulations regarding grazing management. In this case, necessary bylaws and regulations will be formulated. Other Rangeland improvement and development techniques like reseeding, planting of fodder species, and soil conservation measures will be limited to critical sites only, and main reliance for new growth will be on promoting natural regeneration. Adoption of such scientific management system will improve the condition of the range and would stop further degradation and would help in the revival of their productive and protective functions.
- 9.3.3 The concept of “opportunistic approach” instead of considering “average estimated carrying capacity” will be followed, which establishes the annual grazing strategy on that year’s forage production. This will allow pastoralists to make better adjustments of livestock numbers to the

spatial variability, establishes better distribution of livestock to forage availability, and enable increased production

- 9.3.4 Due to overgrazing and mismanagement, a number of pastures and ranges have been invaded by weed (un-palatable) shrubs and grass species, which include poisonous plants as well. These plants on one hand are a potential threat to the health of the livestock, while on the other hand also reduces the productive useable areas of pastures. Resultantly the livestock would avoid such spots and would concentrate on the remaining portion of the land. In this way, the grazing pressure will be diverted to a good pasture, and over time, these would also be overgrazed and become susceptible to the invasion of non-palatable and toxic plant species. Under the policy, this issue will be addressed by avoiding overgrazing, and physical elimination of the non-palatable and toxic and poisonous plants especially before they are ready to shed the seed.
- 9.3.5 Riparian range sites falling within the jurisdiction of rangeland ecosystem, which are also generally used as watering and resting places both for livestock and wildlife, will be given due consideration in the management plans. These are generally the most productive but fragile sites and thus would require careful management techniques.
- 9.3.6 The conversion of range and pasture lands into agriculture land is a common practice especially in hums rich pastures within the forests or in the vicinity of the high hill natural forests. Generally these lands are used for growing high values off season cash crops like peas and potatoes. Though initially these newly converted lands can fetch higher income to the farmers, but in due course of time, due to steep terrain and high rainfall, the top soil is washed away and barren land is left, which cannot support further vegetation, and become a major source of high runoff and sedimentation. In order to stop this process, proper demarcation and delineation of the rangeland will be done, and regularly monitored jointly by the local communities and forest department. Provinces will maintain rangelands to avoid land use change unless economically viable, ecologically suitable and socially acceptable.
- 9.3.7 For the mitigation of the negative impacts of the desertification, controlled rotational grazing, with some soil and water conservation measures will be adopted.
- 9.3.8 Periodic review and analysis of the nomadic grazing system will be undertaken for the integration of the nomadic grazing in the overall management of the rangeland rehabilitation and improvement programme. In this case, the damage to by the nomadic grazing to the surrounding forests will also be taken into account. However, graziers rights will be protected under international treaties,
- 9.3.9 The existing grazing fee collection system will be reviewed, and the fee per animal will be fixed according to the forage production and quality of a given range. However, an appropriate number of livestock will be maintained matching with the carrying capacity or the annual productivity. This will benefit both the land owners and users and will motivate them to keep the range resource in good and productive condition.
- 9.3.9 Graziers g association will be registered to support livestock rearing communities for undertaking collective action regarding the range improvement or ensuring the enforcement of the rules and

regulation. This will also allow the grazing rotation as scattered rangelands will be managed holistically

- 9.3.10 Under the policy comprehensive capacity building programme will be launched for the improvement of the technical and managerial skills of rangeland owners and other users to enable them for adopting and the use of best conservation and development practices for enhanced rangeland productivity and the related functions and services.

9.4 INCREASE FORAGE AVAILABILITY ON THE NON-RANGE LANDS

- 9.4.1 To compensate the forage availability during the critical forage shortage period, alternative land use system will be developed on private as well as on communal land in the vicinity of the villages. These will include agro-forestry and silvi-pastoral. Efforts will be made to increase overall forage availability. This will be done by increasing the number of areas under fodder cultivation and agro-forestry and farm forestry system.
- 9.4.2 The livestock in addition to the forage and fodder available from rangelands are also heavily dependent on the nearby scrub forests, which support evergreen shrubs and trees all around the years. These mainly include oak forests, Olive, Acacia, Gravia, Atriplex, and Zizyphus species. These are major source of animal feed during the critical months (winter) where due to the winter season; the rangeland vegetation cannot support livestock grazing any more. Therefore under this plan great focus will be given on the sustainable management of the scrub forests.
- 9.4.3 The cultivation of the leguminous fodder species on the agriculture lands will be encouraged to supplement the forage availability from the pasture and rangelands especially for the stall-fed animals.
- 9.4.4 The conversion of grazing lands into plantation area will be subject to assurance of forage availability for livestock to avoid shocks to the livelihoods of poor and vulnerable people.
- 9.4.5 A proper system will be developed for the collection, conservation, transportation and storage of the green forage available in the rainy, and other productive seasons to compensate the forage shortage in the critical periods
- 9.4.6 To ensure forage and fodder seed availability in various ecological zones, seed banks will be established to store quality seed. For the proper use of the seed, proper training will also be provided to the farmers groups and communities

9.5 PROMOTION OF RANGELAND ENTERPRISES

- 9.5.1 For the promotion of rangeland enterprises private sector will be encouraged to invest in the identification, collection, processing and marketing of various products. The private, public sector and community organizations will be encouraged investing the whole chain of the enterprise development including the value addition of rangeland products. The processing units for various products will also be established. In addition, to ensure proper marketing of the various range products like medical herbs mushrooms and wool appropriate market information system will be developed to speed up the information flow amongst the stakeholders

9.5.2 Based on the feasibility study on the availability of herbs and Non-timber forest products, certain rangelands or part of the rangelands will be declared the herbs pockets. Herbs development, management, and conservation activities will be carried out intensively in those pockets with active participation of the key stakeholders

9.5.3 In the high alpine and sub-alpine pastures, there are number of patches where medicinal plants and mushroom with high market value are abundant and would require different management prescriptions. Thus under the policy all such zones and locations will be identified and mapped, where judicious utilization will be made based on the commercial and enterprise approach. In such locations, the livestock grazing will be limited and restricted to give more chance for flourishing these valuable herbs and shrubs. Part of the total income derived from the marketing of such plants and herbs will be reused and re-invested for undertaking range management interventions.

9.5.4 The key element for the development of the rangeland resource is creating viable rangeland enterprises, the rangeland infrastructures including the health care unit, animal shelters, watering points, trails and paths will be developed. However in doing so, the ecological consideration will be given due attention

9.6 MANAGEMENT OF RANGELANDS FOR REGULATING AND SUSTAINABLE WATER FLOW AND REDUCED SEDIMENTATION IN DOWN STREAM

9.6.1 Pasture and range resources have also a key role in sustainable water flow in the downstream. Pastures in good condition will be able to perform this function more efficiently and effectively. Therefore under the policy a good vegetation cover will be maintained on the rangelands to increase infiltration for sustainable water flow and reduce soil erosion as well.

9.6.2 In the dry areas include water harvesting as a vehicle for water re-charging and increase local level production

9.6.3 Projects will be launched to keep the watershed in a good condition and have sufficient vegetative coverage to protect the site from erosion and help in the water recharging besides provide various products and services at local level.

9.6.4 Rangelands/watershed modeling will become essential element for range planners

9.7 ECOSYSTEM REHABILITATION FOR BIODIVERSITY CONSERVATION

9.7.1 Biodiversity and wildlife are also one of the key components of a given range and pasture ecosystem and needs to be managed in harmony with livestock management. Due to the increased livestock population, the forage in the easily accessible range sites have been reduced, and to compensate for the forage shortage, they struggle to reach to remote and in-accessible sites, where they disturb the wildlife habitat on one hand and reduce forage availability for the wildlife besides transmitting a number of diseases. In the rangeland management plans such locations which are mainly used by the wildlife, will be identified and demarcated and the management objectives will be focused on wildlife conservation and management. In such areas, livestock movement will be restricted..

- 9.7.2 Due to the scenic locations and rich biodiversity, a majority of range and pastures locations are used for tourism. However, under the prevailing tourism practices, there are no restrictions on the part of the visitors and resultantly this activity is a major problem for wildlife and livestock. In such cases, the concept of ecotourism will be introduced, whereby the tourists can enjoy these spots in harmony with the other land uses like livestock and wildlife production.
- 9.7.3 Studies on rangeland biodiversity will be carried out and data base of the rangeland biodiversity will be prepared and regularly updated. Characterization, mapping and identification of the genetic differences of the rangeland resources will be identified and recorded. The use of biotechnology will also be promoted.
- 9.7.4 Rangeland biodiversity will be conserved and sustainable and efficient utilization of natural resources will be ensured. This will be done with the help of participation of consumers and other stakeholders

9.8 MITIGATION OF THE IMPACT OF GLOBAL WARMING AND CLIMATE CHNAGE

- 9.8.1 The ecosystem approach will be followed, where all the related sub-components will be taken into account for the scientific management of the rangelands. The management will be focused on the conservation and judicious utilization principles. Overgrazing will be strictly prohibited to keep the ecosystem in full productive and functional capacity. The famers will be compensated for any loss occurring due to any disaster especially drought, landslides, epidemic disease and wild fire.
- 9.8.2 Various measures will be introduced and adopted to combat desertification and reduce global warming
- 9.8.3 The local communities in case of disaster will be helped in their coping mechanism and survival strategy.
- 9.8.4 National, and international commitments and related global climate change will be fulfilled to draw international support for various mitigation measures..

9.9 AREENESS RAISING ABOUT THE SIGNIFICANCE AND MANAGEMENT OF RANGELANDS

- 9.9.1 Awareness raising campaign will be conducted on present status and importance of rangeland to bring into the attention of the rangeland dependent communities, forest department staff, policy makers and other stakeholders about the significance of the rangelands, and the multi-dimensional benefits which could be derived from the range-ecosystem products and services, and thus generate interest for the management of the rangelands.
- 9.9.2 Local communities and other stakeholders will be made aware and educated about the inter-relationship between the upstream and downstream as the proper management of the upland (rangelands) will contribute positively to the downstream in term of recharging water table, sustained water supply and reduced runoff and sedimentation.
- 9.9.3 The local communities and other stakeholders will also be informed about the potential of rangeland products and services, can be emerged as viable enterprises and generate income for their

livelihood and re-investing in the development of the rangeland resources. The value addition concept will also be introduced.

9.9.4 The concept of the rotation grazing system and its application in various rangeland ecosystem will be also brought to the notice of the key stakeholders

9.9.5 Through awareness raising and demonstration, the local communities will be motivated to keep more emphasis on the quality of the animal rather than the number. Improved breed will also be emphasized. This shift will be more cost effective and will not deteriorate the rangeland resources.

9.9.6 Awareness raising campaign will also be launched to provide information to the rangeland dependent communities on the key concepts like climate change, global warming, and desertification and their negative impact on the rangeland productivity and functions.

9.9.7 Information sharing and awareness raising campaign will be launched regarding surveillance on trans-boundary animal diseases and the related preventive and mitigation measures

9.9.8 Initiate a comprehensive awareness raising, education and technology transfer programmes aiming at improved livestock production in harmony with other uses including bio-diversity conservation, soil and water conservation and rangeland enterprises development.

9.10 SKILL ENHANCEMENT OF THE FARMERS AND CAPACITY BUILDING OF THE RELATED STAKEHOLDERS

9.10.1 Create range management technicians and official level cadre in the departments specifically recruited to work in rangeland management.

9.10.2 Review the existing curricula related to pasture management will be revised it according to the current day needs

9.10.3 Training and skills enhancement in the key aspects of range management and administration will be provided both at policy and strategic and policy level as well as at field level

9.10.4 The Forest department staff will be trained in the technical, economic and social aspect of the rangeland management. The use of modern technology will also be introduced. The staff will be oriented and exposed to the key concepts of the collaborative and integrated natural resource management. The concept of the multiple use of the resource will also be elaborated.

9.11 APPLIED RANGE RESEARCH AND TECHNOLOGY DEVELOPMENT AND TRANSFER

9.11.1 Ensure the provision of need based applied research and technology developments for enhanced range ecosystem conservation and related productivity and functions for the optimum utilization of the resource.

9.11.2 Rangeland based applied research will be carried out on key issues related to the optimum and balance utilization of the resource by adopting the principles of multiple uses. Applied and need based research will also be carried out on the key issues related to sustainable range management

and bio-diversity conservation. Besides the research on technical dimensions, the socio-economic, ecological and biodiversity dimensions of the rangeland management will also be focused. The research agenda will be developed based on the needs and scope identified by the Forest Department and the related communities. In this case strong linkages will be developed amongst the national, regional and global research and development institutions. In order to ensure the full utilization of the research findings and results, close linkages will be developed between the research institutions and the extension department and the community organizations through regular interaction and information sharing and dissemination workshops.

9.11.3 There are a number of modern technologies which will be adopted in the scientific management of rangeland. The use of GIS and remote sensing will be introduced to know the extent and condition of the rangeland with a given time-frame, for monitoring moisture fluctuations and forage quantity and quantity and vegetation cover. The proven useful concepts, technologies and methods for controlled grazing as well as range improvement will be also brought into practice. The main technologies will include; cottage industries for wool and medicinal plants processing and other enterprises related to the rangeland products and services, forage seed production and nurseries establishment

9.11.4 The capacity of the range research institutions will be enhanced by providing the required training and facility and linking with other regional and global research centers and institutions. The range researchers will be required to have access to the recent research findings done on similar themes in other countries and would also contribute articles and publications to the various journal especially to the journal of range management.

9.12 FINANCIAL RESOURCE GENERATION

In order to sustain development interventions and provide the required funds, National Range Conservation and Development fund will be established to develop rangeland and support the livelihoods of the poor and vulnerable population of the rangeland dependent communities in case of disasters like drought, floods, wild fire, landslides, and epidemic. Efforts will also be made to improve their access to education, public health services, and creating essential assets especially for the women. The resources for the pool will be derived from the endowment fund provided by the federal and provincial government, from the fee charged on various enterprises and their products(fee from national parks, medicinal herbs, wildlife, tourism, and trekking), and through a deduction from the grazing fee. The donor's funds will also be a part of this pool money. This fund will be jointly managed by the concern communities and the department through a set criteria and procedures.

9.13.1 COORDINATION AND LINKAGES DEVELOPMENT

9.13.2 The Ministry of Environment and the Provincial Forest Departments will ensure that the forest policy and Rangeland Policy are considered as closely related and be treated as sub-components of the natural resource management and conservation. Nomadic grazing will be thoroughly studied and efforts will be made to integrate it in the overall grazing strategy. The grazing route

for nomadic grazing and the related pastures fit to undertake the additional grazing pressure resulting from the additional case load of nomadic grazing (rephrased).

9.13.3 All the international conventions and agreement related to the biodiversity conservation, proper management of natural resources, and desertification will be fully honored to get global support for the development and conservation of this important resource.

9.13.4 Linkages and cooperation with national, regional and international organizations and agencies will be encouraged and strengthened to improve range condition and enhance productivity at ecosystem level by learning from each other experiences and success stories and adoption of best practices.

9.13.4 In order to take concrete actions at policy and operational level for the scientific management of rangelands, a Rangeland Development Advisory body under the coordinating role of the provincial Forest/Environment departments will be constituted having members from the agriculture and livestock departments Similarly an advisory and coordination body/forum at federal level will be established with the main responsibility of formulating and monitoring national level Rangeland Policy, and the related acts and regulations, keep data base, provide funds and build the implementation and operational capacities of the provincial forest departments. The provincial and federal level bodies will also ensure that a collaborative and holistic natural resource management approach based on multiple use concepts is institutionalized.

10. Institutional Arrangement

Currently the rangelands are under the administrative control and management of the respective provincial Forest Department. Thus the policy directions are mainly derived from the National and Provincial Forest Policies. From the holistic natural resource management point of view, and their close location in the proximity of the forestry resources, the use of same institutional arrangement will be continued. However, to give this component more focus, qualified staff at policy and strategic level will be employed, and correspondingly at field level Rangeland technicians will be recruited. In fact, the rangeland component in each province will be managed by a Chief Conservator of Rangelands with a core team of experts and staff at forest circle, division and range level, and field level technicians exclusively working for the rangeland component. This component will have its own funds, and developmental projects.

For better coordination with the forestry component, agriculture and livestock coordination committees at provincial and federal level will be established to steer the whole process of range management development in the overall context of natural resource management. The role of these committees will be mainly coordination and thus will be advisory in nature. The federal coordination committee will be established within the Ministry of Environment.

11 Financial Implications

For the implementation of the policy financial resources will be required and will be provided from the Ministry of Environment and provincial forest departments.

12 Legal Aspect

In line with the National Rangeland policy, Provincial Rangeland Policies will be formulated. For the operationalization National as well as provincial Rangeland Management Acts and rules and regulations will be framed and approved by the competent authority for implementation.

13 Monitoring and Evaluation

In order to follow up on the operationalization of the policy a monitoring framework will be developed with certain indicators and bench marks. The Federal and Provincial Committees will be entrusted for the monitoring of the policy. The federal coordination committee role will also include coordination, capacity building, undertaking research and international organizations both national regional and global

14 RISKS

As such there is no threat from the policy; however the adoption of a holistic and collaborative concept of management will require closer working with the other related departments like livestock and agriculture, which may be initially seen as a threat by the provincial forest departments.