

IUCN FORESTRY PROGRAM

REPLICABLE NATURAL RESOURCE MANAGEMENT PRACTICES

THE NORTHERN PAKISTAN EXPERIENCE

IUCN SARHAD PROGRAMME OFFICE



PREFACE

As a sequence of international endeavours to combat natural resource degradation, a number of internationally acclaimed projects have been implemented during the last two decades in Northern Pakistan. These projects have designed, tested and validated number of innovative practices, approaches and tools to effectuate sustainable and holistic management of natural resources in the country. Some of the practices promoted by these projects proved exceptionally successful and have contributed apart from amelioration of ambient environment substantially in improving the livelihoods of the involved communities,. Due to absence of an institutionalised mechanism for capitalizing on these successful experiences, many of these practices have remained localized or have been buried under piles of official files in favour of more mundane concerns.

Program Support for Northern Pakistan (PSNP), a Swiss funded initiative of IUCN Pakistan in NWFP and Northern areas, in an attempt to identify and review the path-breaking practices, commissioned a study titled 'Replicable Natural Resource Management Practices: The Northern Pakistan Experience'. The following nine projects from Northern Pakistan were subjected to the comprehensive scrutiny in order to dig out experiences which met the laid down criteria and are fit for replication elsewhere:

1. Kalam Integrated Development Project (KIDP).
2. Dir Kohistan Project (DKP).
3. Agha Khan Rural Support Program (AKRSP).
4. Sarhad Rural Support Program (SRSP).
5. NWFP Forestry Sector Project (NWFP FSP).
6. Neelum Jehlum Valley Community Development Project, AJK (NJVCDP).
7. Community Forestry in Northern Areas.
8. Project for Horticulture Promotion (PHP).
9. SDC Farm Forestry Project

In pursuance of the aforementioned study commissioned by INCN-Pakistan a comprehensive report has been developed. In order to further improve and refine the document and validate its findings, the report was widely shared internally in IUCN Pakistan and was got reviewed by an external panel comprising of an academician and a practicing professional. Thereafter, the document was circulated outside IUCN and workshops were held at Dir, Gilgit, Saidu Sharif and Abbottabad in order to share findings with a wider cross-section of stakeholders and to collate inputs with regard to gaps still to be plugged to guide future initiatives

The report has accordingly been extensively revised and improved in light of the suggestions, recommendations and feed back so received.

ACKNOWLEDGEMENTS

Although I have compiled the report, but the actual authors are those countless farmers, VDC members and resource persons who provided me with necessary information. I owe a special debt of gratitude to all of them for their painstaking efforts, hospitality and intellectual contributions.

I specially acknowledge the sincere efforts of Mr. Muhammad Yousaf Jan the then head of IUCN Pakistan Forestry Programme who conceptualised and guided the study and contributed a model write up on off-season vegetables. I am also highly obliged to my fellow partners in the study Syed Hanif Shah and Syed Khurshid Anwar, who not only helped in collection and analysis of data but also contributed write up for the report.

I will be failing in discharge of my duties, if I hesitate to offer my sincere thanks to Mr. Inam Ullah Khan Coordinator Policy Advocacy IUCN Sarhad Office for his tireless efforts, guidance and support throughout the study. I am also indebted to Mr. Rizwan Ahmad and Mr. Hanif Khan for their support and advice.

Shabir Hussain

List of Abbreviation

AHITI	Animal Husbandry In-service Training Institute
AJK	Azad Jammu and Kashmir
AKRSP	Agha Khan Rural Support Programme
ATI	Agricultural Training Institute
BCS	Baluchistan Conservation Strategy
CBOs	Community Based Organizations
CEPAUR	Urban Rural Support and Development Alternatives
DKP	Dir Kohistan Project
ERP	Environmental Rehabilitation Project
FATA	Federally Administered Tribal Areas
FFP	Farm Forestry Program
FSP	Forestry Sector Project
FVDB	Fruit & Vegetables Development Board
HRDI	Human Resource Development Institute
IRDP	Integrated Rural Development Project
IUCN	International Union for Conservation of Nature
IUCNP	International Union for Conservation of Nature Pakistan
KIDP	Kalam Integrated Development Project
LEW	Livestock Extension Worker
MFVDP	Malakand Fruit & Vegetables Development Project
MPT	Multi Purpose Trees
MT/EW	Master Trainer / Extension Worker
NA	Northern Areas
NACS	Northern Areas Conservation Strategy
NASSD	Northern Areas Strategy for sustainable Development
NCS	National Conservation Strategy
NGO	Non Government Organization
NJVCDP	Neelum Jehlam Valley Community Development Project
NR	Natural Resources
NRM	Natural Resource Management
NTFP	Non Timber Forest Produce
NWFP	North West Frontier Province
PARD	Pakistan Academy for Rural Development
PHP	Project for Horticulture Promotion
PRA	Participatory Rural Appraisal
PSNP	Program Support in Northern Pakistan
PVC	Poly- Vinyl Chloride (a type of plastic)
PVI	Productive Village Infrastructure
RNR	Renewable Natural Resource
RSP	Rural Support Program
SDC	Swiss Development Co-operation
SFDP	Siran Forestry Development Project
SFPMD	Social Forestry Project Malakand Dir
SFS	Sarhad Forest School
SPCS	Sarhad Provincial Conservation Strategy
SRSP	Sarhad Rural Support Programme
TBA	Traditional Birth Attendance
ToP	Terms of Partnership
ToR	Terms of Reference
UNCED	United Nation Convention on Environment and Development
US	United States
USAID	United States Agency for International Development
V-AID	Village Agricultural & Industrial Development

VDC
VDF
VO
WDC/WO

Village Development Committee
Village Development Fund
Village Organization
Women Development Committee / Women Organization

Glossary

Agro-ecological zone	Environmentally and socially sensitive approach to agriculture that focuses not only on production but also on the ecological sustainability of production system adopted for a particular set of ecosystem.
Clusters	A group of community organizations, pooled together to address cross boundary common issues of the adjoining villages e.g. Management of Natural resources, watershed management, Range Management etc.
Comilla project	East-Commila-thana project in the then East Pakistan (Now Bangladesh)
Controlled grazing	It is the method of grazing livestock through exercising rotational grazing in such a manner that maximum use can be made without inducing downward trend in the grazing land.
Karez	A traditional a system of underground carriage of water (To avoid transpiration losses) for irrigation in Balochistan.
Rodkohi	It is a traditional system of harvesting rainwater and spreading through dikes, traditionally applied in the foothills of the southern NWFP, especially D.I.Khan.
Stake holder	An individual, group or institution having a stake/interest.
Tenure	The bundle of rights, concessions or conditions attached to an estate.

EXECUTIVE SUMMARY

During second half of the last century growing concerns of environmental degradation prompted donors to launch massive rehabilitation projects. Initially the focus of these projects was confined to the development of technical solutions and increasing outputs only, as such despite concerted efforts and such activities were not fully owned by the communities. This brought home the learning that unless not only communities are appropriately involved at all levels (from planning to implementation) of execution of the activity, but also environmental concerns are associated with appropriate economic incentives for the communities, none of the activity gets sustained, no matter, how beneficial it may be for the amelioration of disturbed environment.

Consequently, globally a major paradigm shift was witnessed. In consonance with this change in the vision and work paradigm, the issue of environmental degradation was also tackled in Pakistan through the two-pronged approach. At macro level, the national, regional and district strategies are being developed to provide strategic frameworks to create enabling environment, while at the micro-level, number of innovative projects are striving to develop implementation approaches and tools to effectuate sustainable and holistic management of natural resources. However, both these efforts were undertaken in isolation and in parallel to each other. Although, considerable number of tools and practices were identified and pilot tested by these projects but due to lack of proper institutional mechanism most of these learning's could not be suitably extended and got buried in piles of files locally.

The IUCNP under, PSNP, endeavoured to identify, document and validate all such mature initiatives to create synergy between the strategic frameworks and these initiatives as well to guide future pursuits. In this quest, to sustain such activities and to set up self-sustaining rehabilitation systems, a lot of studies have been conducted worldwide. The initiatives, which are self-sustaining, gradually get embedded in the local culture and play an outstanding role for the amelioration of living environment, so are commonly regarded “Best NRM Practices“. The best NRM Practices are decidedly the ones that are ecologically suitable, economically feasible, socially acceptable and technologically adaptable to local circumstances, result in lasting positive changes and can be successfully replicated in other areas.

Thus, the best practice being economically attractive, after initial introduction, gets accepted, replicated without external support, imbedded in the local culture and ultimately becomes part of local norms. Thus an alien intervention, over the time, starts converting into traditional activity. As such, the best determinant to identify best practice is its “sustainability” at a given point in time under a given setup of conditions at a particular locality. In order to facilitate assessment and analysis of perpetuity and replication potential of an activity, the following definition of sustainability has been adopted for the study:

Any activity, system, process or condition carried out for amelioration of the ambient environment, which could sustain and replicate itself under the given socio-economic, political, institutional and technological setup, none or minimal external support, over a comparatively longer period of time, can be termed sustainable at that point in time.

The experience has revealed that an activity can only be sustained if it:

- Is demand driven
- Ensures security of tenure
- Have a sound support mechanism and local institutional set up for its initiation and subsequent promotion.
- Have a well-developed indigenous local management system to nurture it.
- Provides access to capital.
- Is affordable
- Have opportunities of recyclable investment.
- Is risk free.

Under the study, nine (9) projects identified in the ToR were surveyed. During the study, besides review of relevant literature and personal observations, detailed discussions were held with the prominent resource persons and the village communities. All the NRM activities executed by the projects were studied, enlisted and critically screened through the criteria developed for the purpose. The following initiatives have thus been selected as best NRM practices, for the reason that they have become stable and are gradually getting adopted.

- | | | |
|---|---------------------------------|--|
| 1 | Social Organization: | RSP Model and NRM Model |
| 2 | Capacity Building: | Technical skills, managerial skills, marketing skills
Financial, management, facilitation and social skills. |
| 3 | Forestry: | Nursery, farm forestry, utilization of forests and other initiatives such as controlled grass cutting, seed collection and terracing |
| 4 | Agriculture: | Fruit nurseries, off-season vegetables, orchards and farming system. |
| 5 | Livestock: | Livestock extension and preventive measures. |
| 6 | Entrepreneur Development | |
| | (a) | Rice husking, fruit nurseries, fruit processing, off-season vegetables, bee keeping, seed multiplication, mazri products, market based professional skills, Saving & credit, Livestock Ext. workers, agri. ext. worker and collective marketing. |
| | (B) | Women income generation activities
Vegetable nurseries, kitchen gardening, embroidery, handicraft and sewing |
| 7 | PVIs: | Drinking water, irrigation, hydel projects, land development etc. |

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Introduction

Background:

During the last few decades the growing concerns of environmental degradation and appreciation of resource scarcity levelled international opinion and motivated donors to launch massive projects for rehabilitation of disturbed environment, worldwide. However, initially emphasis of these projects remained on the development of technical solutions and increasing outputs only, till the United Nations Commission on Environment & Development (UNCED), through the Brundtland report (1987), presented the concept of sustainable development. This report clearly brought out that development could only be sustained over a longer period, if it is ecologically suitable, socially just (gender balanced & equitable), promise economic benefits and is generated through sustainable use of *natural resources*. As such, it urged to marry environmental concerns with economic incentives for local communities, to sustain natural resources and to effectuate sustainable development. This resulted into a major shift in the vision and working paradigm of conservationists. Now, the natural resources are being managed more holistically as a tool of poverty alleviation and rural development. Thus, globally the matter is being tackled through following two-pronged approach:

- At national level the governments, in pursuance of the world conservation strategy and allied efforts, started developing strategic frameworks to organize sustainable management of natural resources; while
- At local level, innovative projects started developing implementation tools and practices to effectively manage natural resources, as a tool of poverty alleviation and sustainable development.

In the quest for sustainable development, the IUCN-Pakistan, took the initiative of pursuing the former mentioned approach and supported the Government of Pakistan in its sacred pursuit of developing the National Conservation Strategy (NCS). It subsequently facilitated the Governments of NWFP, Balochistan and NA in the development of Sarhad Provincial Conservation Strategy (SPCS), Balochistan Conservation Strategy (BCS) and Northern Areas Strategy for Sustainable Development (NASSD), as their sustainable policy agendas, respectively.

Meanwhile, some donor-assisted projects in Northern Pakistan, while pursuing the latter mentioned approach, endeavored to design and test some tools and practices to implement these strategic initiatives on pilot scale. Some of these important projects such as Kalam Integrated Development Project (KIDP), Dir Kohistan Project (DKP), Agha Khan Rural Support Program (AKRSP), Sarhad Rural Support Program (SRSP), NWFP Forestry Sector Project (NWFP FSP), Neelum Jehlum Valley Community Development Project, AJK (NJVCDP), Community Forestry in Northern Areas, Project for Horticulture Promotion (PHP) and SDC Farm Forestry Project successfully tested and introduced such innovative practices, on pilot scale. However, due to lack of proper institutional mechanism, most of these practices, despite being very effective and beneficial, could not be extended suitably and got buried in piles of files locally.

The IUCN, Pakistan, apart from preparation of aforementioned strategic frameworks of sustainable development is now also facilitating respective governments for their implementation. As such the IUCN- Sarhad programme office, Peshawar, under PSNP, Which is a project responsible to provide programmatic support to the IUCNP projects in the Northern Pakistan took the initiative of launching this study, so that the mature initiatives could be identified and their linkages with respective strategic

frameworks could be understood to develop much needed synergy between the efforts gone in through either of the approaches mentioned above.

Objectives:

The study is aimed at proper analysis of the vast treasure of knowledge acquired through aforementioned projects, which is lying dispersed and buried in files at different places, to achieve the following objectives:

- Identification of successful NRM initiatives designed, pilot tested and recommended by these projects for wide scale dissemination.
- Assessment of scope of expansion of these best NRM initiatives and identification of areas and conditions under which these can be suitably extended for wider benefit of rural masses in northern Pakistan.
- Collection of relevant information pertaining to best NRM practices, its verification and documentations for future reference.
- Making suitable recommendations to guide future undertakings and to accelerate rate of adoption of best NRM interventions.
- Feeding public policy formulation process by analyzing what works and what does not.

Terms of reference:

The detailed terms of reference (ToR) of the study are given in **annex-I**, while its salient features are summarized as under:

1. Review the relevant literature/documents of the selected initiatives, i.e. Kalam Integrated Development Project (KIDP), Dir Kohistan Project (DKP), Agha Khan Rural Support Programme (AKRSP) Chitral, Sarhad Rural Support Programme (SRSP) Abbottabad, NWFP Forestry Sector Project, Malakand Dir Social Forestry Project, Neelam valley Jehlum Valley Community Development Project AJK, Community Forestry in Northern Areas and SDC Farm Forestry Project.
2. Develop criteria of selection of replicable NRM related practices in consultation with Head Forestry Programmed (HFP) and Coordinator Agriculture IUCNP Sarhad Office Peshawar.
3. Select the best practices in accordance with the criteria and in consultation with the above IUCNP staff.
4. Verify performance of the identified best practices in the field.
5. Consult the communities and document their opinions and experiences with regard to the suitability of the practices.

Methodology

Although, the Terms of Reference of the study clearly spell out the process, yet the methodology pursued to conduct the study was further elaborated and refined, in the light of ToR, in consultation with the select IUCN-Pakistan staff in Sarhad Program office, Peshawar as given in **annex-II**. The following salient tools were used to collect, compile and analyze the data for the study:

- Review of literature.
- Meetings with select IUCN staff to develop criteria.
- Development of criteria for identification of best NRM practices.

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- Field visits to identify best NRM practices through:
 - Discussions with the resource persons;
 - Consultations with the communities;
 - Assessing factors that influenced the sustainability of the NRM practices.
 - Development of list of Best NRM practices.
 - Ground truthing to verify results.
 - Finalization of list of Best NRM practices.
 - Compilation of report

Projects studied

The projects mentioned in the ToR and PHP were visited as per itinerary (Appendix-III). The brief profiles of the studied projects are given in Appendix-IV.

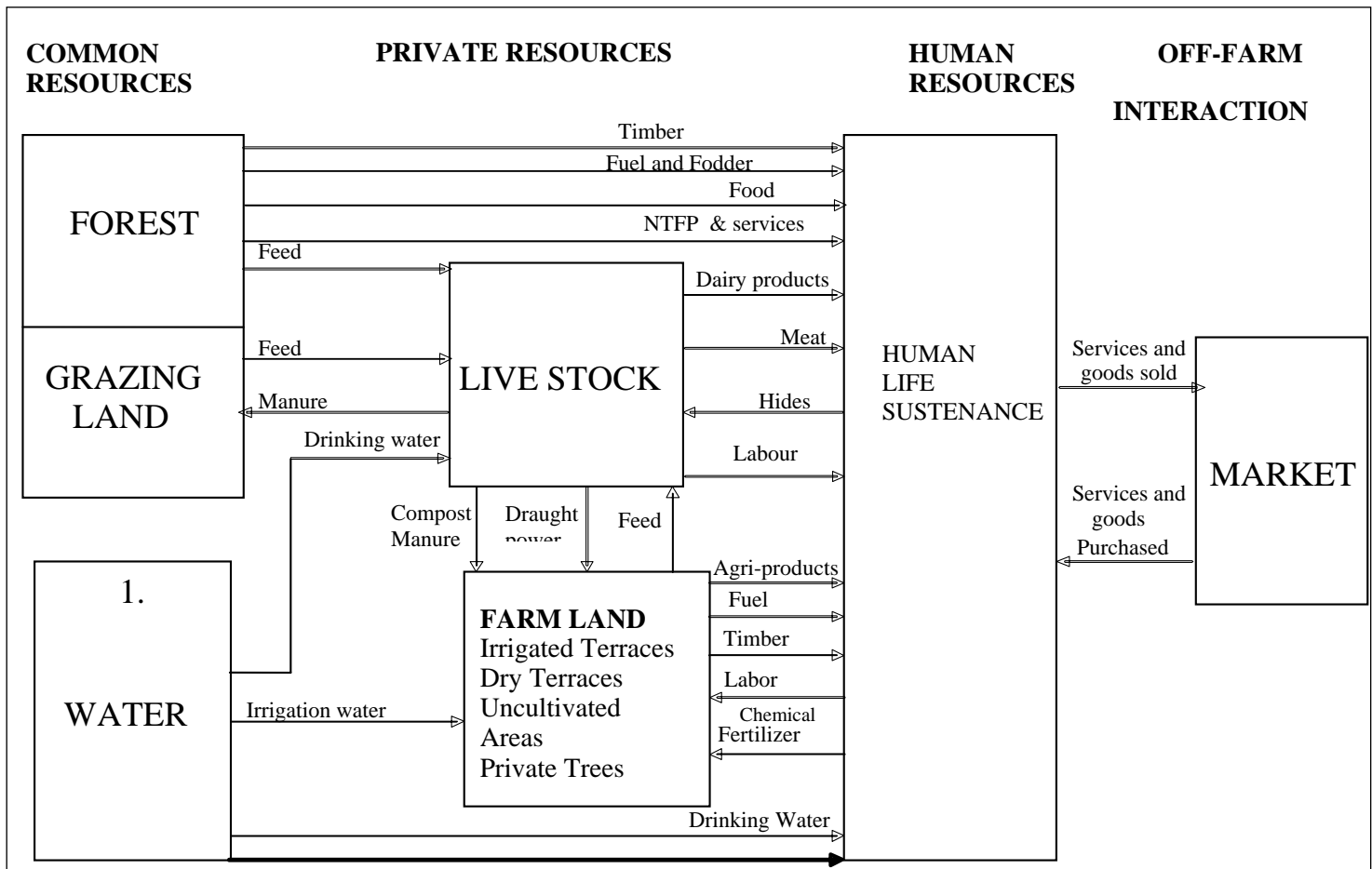
IDENTIFICATION OF BEST NRM PRACTICES

Natural resources (NR):

Almost all living and nonliving endowments of the earth constitute Natural Resources, but the term is traditionally used for only those Naturally occurring Resources and Systems, which are useful to humans or could be so under plausible technological, economic, and social circumstances. Even in this restricted sense, the ambit of natural resources is still considerably broad. Hence its boundaries need proper delineation. The term Natural Resources for the purpose of this report will cover only the following Renewable Natural Resources (RNR) and their interaction with the human subsistence:

- Forests.
- Farm lands/Agriculture.
- Grazing lands.
- Livestock.
- Water.

A schematic representation of the complex relationship between above mentioned Natural Resources and Human subsistence is produced below, which defines the scope of current study.



Flow chart indicating major Renewable Natural Resource and their interaction with Human subsistence. Adopted with modifications from Fisher, R.J. and Gilmur, D.A (1991)

NRM practice:

Any initiative undertaken to conserve nature and natural resources will be considered NRM practice for the purposes of this study. As such apart from traditional practices, all other practices undertaken by these projects to promote conservation of natural resource base, such as social organization, skill and entrepreneur development and capital mobilization etc. would also be considered NRM practices for this study.

Best NRM practices:

In a quest to better manage and sustain nature and natural endowments for the existing and coming human generations, countless interventions were designed, tested and introduced during the last few decades. Although, almost all of them were equally geared towards inducing sustainable management of Natural Resources, only a fraction of them succeeded in providing optimum attraction to local communities for their continuation on cessation of these projects/support mechanisms. Given that the public resources are scarce and rural development and natural resource conservation projects by their very nature are temporary activities for a defined period, it is always intended that self-perpetuating and readily adaptable activities may be promoted through these projects, so that the same could be maintained and replicated by the local communities at their own even in the post project period as well. Since all such, self-sustaining and successful initiatives, gradually, become part of local norms and traditions, they promise and inspire trust for the future. Given that these initiatives play outstanding role for the amelioration of living environment, they are generally regarded “the Best NRM Practices”. The development workers around the globe consequently endeavoured to probe the following questions and find appropriate solutions, so that self-perpetuating rehabilitation process may be instituted:

- Why farmers abandon such promising practices, which have obvious ecological suitability?
- Why certain practices get more readily adopted at community level than others?
- Which practices have become sustainable, and why?
- What are the conditions that lead to their adoption, replicability, and transferability?

Such probes both regionally and internationally developed requisite understanding to design, implement and promote such interventions that could easily get adopted sustainably, in a post project period as well. It has been established through such efforts that the best NRM practice is the one that qualifies the following conditions:

- It should be feasible and effective from resource management viewpoint (Ecological suitability) and should create visible impact by controlling resource degradation within the least possible time;
- It should be economically attractive for the stakeholders (Economic viability), should ensure positive returns, promise higher incomes, and maximize welfare of the participating stakeholders over a shorter time span;
- It should be affordable and technologically adoptable (Technical suitability) to the local requirement of that time or associated with appropriate capacity building and input delivery system;
- It should have appropriate institutional and social framework to promote:
 - Access of stakeholders, especially more marginalized segments of the society;
 - Equitable, just and secured distribution of benefits;

-
- Ownership and security of tenure;
 - It should result in positive and lasting changes.
 - It should be adjustable to local conditions and should have a proven potential of transferability, adaptability and replicability in different geographic and social set ups.

The concept of best practices has now been well accepted the world over. That's why the Second United Nations Conference on human settlements (habitat II) and the Dubai Declaration, recognizing the importance of the best practices as an outstanding contribution for improving living environment have started "Dubai international award for best practices". It is held biennially. So far, four awards have been held in 1996, 1998, 2000 and 2002.

Sustainability:

As mentioned earlier best practice is the one, which after initial introduction is readily accepted, adopted and replicated, without external support. It gradually gets imbedded into local culture and ultimately becomes part of local norms. Thus an alien intervention over the time starts converting into a traditional activity. As such the best determinant that easily identifies a best practice is its "sustainability" at a given point in time under a given setup of conditions in a particular locality. This demands that in order to assess and analyze perpetuity and replication potential of an activity, the dynamics of sustainability must be properly understood.

Sustainability is a common English word that has been derived from the verb "To sustain" which means (as per Chambers Dictionary) to hold up; to support; to maintain; to keep going; to keep up; to prolong; or to support the life of. However, sustainability has so loosely and differently been defined that often one feels uncertain as to what it exactly stands for. Perhaps one reason of this uncertainty is that sustainability has many facets and it is always interchangeably used. It is normally used to express either of the Sustainable **Development**; Sustainable **process**; Sustainable **system**; Sustainable **activity**; Sustainable **growth** or Sustainable **use**. Thus O. Riordan, (1985) while describing difficulty of defining sustainability, described its definition as an:

"Exploration into a tangled conceptual jungle where watchful eyes lurk at every bend"

This report discusses sustainability of activities in particular and of the processes, and systems in general. Hence a very comprehensive definition needs to be adopted which could properly elaborate the concept. However, a few commonly accepted definitions are reproduced below to set the context, before presenting the definition specially developed for this study.

a) Sustainable development:

- *Sustainable development is the development that meets the needs of present without compromising the needs of future generations to meet their own needs (Brundtland, 1987).*
- *Sustainable development involves devising a social and economic system, which ensures that these goals are sustained, i.e., that real income rises, that education standards increase, that the health of the nation improves, that the general quality of life is advanced (Peace, Makandia and Barbieu 1989).*
- *Improving the quality of human life while living within the carrying capacity of the ecosystems (IUCN (1991)).*

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- *Ultimate process of achieving human and eco-system well being, without compromising the ability of future generations and ecosystem to meet their own needs.*

b) Sustainable Agriculture:

- *Sustainable agriculture is a system that can evolve indefinitely towards greater human utility, greater efficiency of resource use and a balance with the environment, which is favorable to human, and most other species (Harwood, 1990).*
- *The ability to maintain productivity, whether as a field or farm or nation (Conway and Barbier, 1990).*

c) General Sustainability:

- *Sustainability is when new ways of working and improved outcomes become the norm.*
- *Sustainable means using methods, systems and materials that won't deplete resources or harm natural cycles " (Resenbaum, 1993)*

Definition adopted for the study:

Any activity, system, process or condition carried out for amelioration of ambient environment, which could be sustained and replicated under the given socio-economic, political, institutional and technical setup, without or minimal external support, over a comparatively longer period of time, can be termed sustainable at that point in time.

Sustainability expresses a state of equilibrium, which varies with change in time and space. It can be attained if a genuine interest and ownership is created amongst the stakeholders. The sustainability manifests ownership of stakeholders and expresses that the given activity/initiative is socially just, economically viable, ecologically suitable, technologically appropriate and institutionally workable under the given set of conditions. Contrary to normal belief, sustainability is not a relative term, as at a certain moment, some thing would be either sustainable or not, but can't be in between. However, when it is said that some thing is more sustainable, it is meant to describe that it has higher survival probability.

Principles of sustainable activity:

Sustainable activity manifests the following common principles:

- Adaptable to change
- Integrates ecological, cultural and economic systems.
- Keep options open to future generations.
- Current resources or social conditions, which lent sustainability, may not be maintainable
- Based on stakeholders support & local solutions
- Equitable sharing of costs and benefits of management.
- Uses sustainable development to address common goals.

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- Focuses on local, spatial and temporal context.

How to attain sustainability

Demand-led initiatives:

None of the activities, despite being extremely useful (for sustainable management of natural resources), can be sustained longer with out persistent external support, unless genuine interest/ownership is generated and cultivated in the community. . The ownership of-course can only be created, if the initiative is need based and lays proper emphasis on socio-economic well being of people. Thus to render an activity sustainable, ***ownership needs to be cultivated***. As such the activity shouldn't be sold, but the stakeholders should be encouraged and facilitated to buy it.

Security of tenure:

Nevertheless, the proposed investment is made fully secured by guarantying access to and control over the assets and benefits so created and generated, none would either adopt it, or agree to invest in it, no matter how beneficial may it be and how strongly may it be promoted. That's why to lend sustainability to an activity, before making investment ***security of its tenure is ensured*** and predetermined equitable system of shares in investment and benefits, likely to accrue is instituted through drawing up formal agreements.

Local institutional setup:

An effective and stable local institutional set up (structure and system of control and authority and allocation of functions and responsibilities) is essential to mobilize local resources and to organize sustainable management of resources. Local Organizations attempt to mobilize working capital, improve technical and entrepreneurial capacities and promote linkages to tap available delivery mechanisms. Thus by ***effectuating collectivism, forging productive partnerships*** and cultivation of self-reliance, they strive to sustain development initiatives.

Support mechanism:

Effective support mechanisms are not only created for designing, testing and validating best NRM practices, but also to upscale, sell and extend them, till they get readily adoptable without external support. Since the support mechanisms cannot be sustained indefinitely. Therefore, to lend sustainability, emphasis needs to be laid on cultivation of self-reliance, promotion of linkages, developing claim making power, forging productive partnerships and optimally mobilizing local resources since initiation. The support mechanisms from the beginning needs to create clarity of their purpose, define phasing out strategy and time schedule. If the ***support mechanism delivers demand driven initiatives through process approach*** and encourages self-reliance, the initiatives can get stable more easily.

Local Management System:

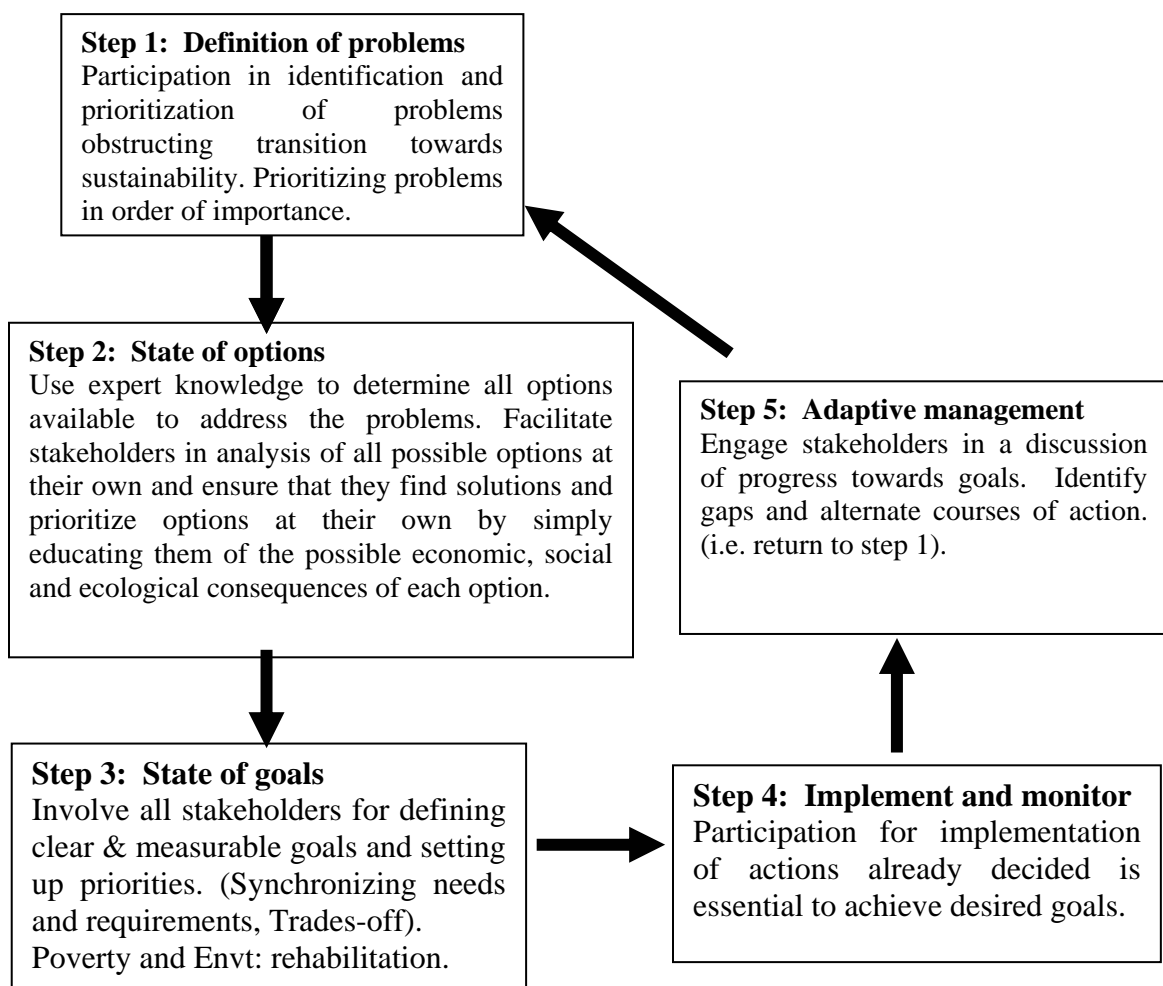
Local management systems for having been firmly rooted in local culture and adapted to prevailing conditions are usually more stable; mature; and just. They reflect traditional use

rights and obligations, which are accepted, practiced and respected across the board by the entire community. Thus the members, due to *security of their returns and established usufruct rights, accept the obligations* that render the initiatives more sustainable.

Process approach:

Effective involvement of stakeholders in decision making all along, i.e. in identification and prioritization of problems, finding solutions, devising and ranking options and implementing favoured option from the beginning, supports the sustainability of the activity. Partnership *tailored to local needs and system of sharing benefits* makes it acceptable to all. The following diagram expresses the process of sustainability:

The Process of sustainability



Skill Development:

To replicate an activity skill is necessary. An activity can only be easily replicated without continuous external support, if it is technologically simple or necessary technical support has

been made available at the doorstep of each implementer. Thus initiatives that are *technologically simple can be replicated* as they can easily blend in local culture.

Access to capital:

Besides organizational infrastructure and improved skills, capital is also a basic requirement for development. Unless the required working capital is made available, sustainability of none of the activities can be guaranteed. That is why a good rural development program always strives to build local capital on one hand and strives to improve access to national capital and resources on the other. *Added availability of capital* promotes investment opportunities in economically viable initiatives.

Affordability:

The persons having improved sources of living have greater possibility of diverting a part of their surplus livelihood sources for investment on economically viable development initiatives. Thus people with extended sources of livelihoods; due to *their extended affordability/investment capacity* can help in sustaining and promoting economically viable initiatives.

Recyclable Investment opportunities:

A community, which has developed such a resource that can perpetually generate capital or cashable products, becomes more self-sustaining than the ones, which don't have such recyclable investment potential. *Once recyclable capital is available* possibility of investment in need based activities increases, so activity becomes more stable.

Risk coverage:

The poor have normally very limited sources of livelihoods. They can't take risks to experiment some thing new; unless have surety of returns better than the present one. As such they cannot be incited to experiment new technology or initiative, unless their *risk is fully covered* by the support mechanism initially.

Levels and scales of sustainability

Various perspectives and levels of sustainability prevail from the viewpoint of different stakeholders. Considering the household as the basic level and while moving up the ladder the various rungs may be the community, village, project, and program, so on so forth. These activities can only realistically become self-perpetuating if these suit the needs of the adopter; therefore, the most important level is that of a farmer or/household. The desired activity at this level becomes self-perpetuating with out any external support.

Besides, an activity can become sustainable at subsistence scale but due to lack of proper market mechanism the parity for commercial viability may not be achieved. The existing study mainly focuses on sustainability with the perspective of farmer/community and preferentiality on market scale.

Criteria of selection of best NRM practices

The criteria of selection of best NRM practices are based on the premise of its sustainability with the viewpoint of local communities and market. The following criteria have been used to assess the sustainability of an NRM intervention based on its viability potential:

Table showing Criteria of selection of best NRM practices

S.No:	Factors	Indicators		Description
1)	Well-being and social security	Need based activities	Free of negative impacts, if so, be associated with mitigation efforts	Participation in decision making ensures need base interventions, so well-being and social security
			Presence of benefits distribution mechanism	Traditional system or special agreements ensuring added access/control.
		Improved access to and control over resources.	Just and equitable benefits distribution mechanism.	Traditional system or special agreements ensuring added access/control.
		Secured and improved Livelihoods base	Sustainable on-farm income	Natural capital and its regenerative capacity remain intact, ensuring sustained income from RNRs.
			Off-farm income	Capital, Skill level and Entrepreneurial capacity improves, enhancing off-farm income potential.
			Market information	Marketing linkages will demonstrate potential to optimally market produce.
Affordability	Size of investment	Higher the size of investment lesser will be chances of investing in it.		
	Availability of capital	More the working capital more is possibility of productive investment.		
	Alternate options of investment	More the options of alternate beneficial investment, Lesser will be chance of investment in less remunerative activity.		
	Market of product	Higher marketability creates, greater affordability.		

2)	Economic Viability		Optimum Returns	Higher returns more affordability.
			Risk	Less affordability of risky enterprise.
		Optimal Economic return	Cost of production	Low cost of production renders activity more economical.
			Market	Established competitive market ensured returns.
			Gestation	Lesser the gestation more frequent returns better recovery.
		Marketability of products	Demand	Products with higher demand have more buyers and greater economic viability.
		Scale of production	Subsistence	Commercial items fetch cash so bigger scale production is more remunerative.
			Commercial	
3)	Social acceptability	Compatibility with local traditions		Compatibility does not hinder replication.
		Adaptability to customs		Compatibility with customs increases social acceptability.
		Taboos		Relevance to taboos increases acceptability.
		Does not negatively affect power structure		Power centers fight against what affects existing setting.
4)	Technical Feasibility	Simplicity	Compatibility with local skills and resources	Simple activity is readily Adaptable.
		Access / availability of technology	Local market	Be accessible through local market.
		Can be grafted on local skills and resources		Being compatible to local resources becomes more practicable
5)	Ecological suitability	Adoptability to biophysical factors	Climatic factors	Temperature and rainfall suitable
			Edaphic factors	Soil conditions conducive.
			Physiographic factors	Appropriate physiography.
		Ecological security	Erosion	Arresting erosion, controlling floods and other ecological hazards, maintaining fertility and biologically controlling pests, ensure ecological security.
			Floods	
			Pests	
			Hazards	
Chemical fertilization				

6)	Local institutional setup	Institutional infrastructure	Hujra	Traditional or representative supported local institutions are essential to organize sustainable initiatives.
			Jirga/Collective spirit	
		Formal organization		
		System of management		
Management system	Obligations well defined and accepted	Local system is manifested by presence of obligations and benefits distribution system.		
	Investment and benefits sharing system			
Collective working spirit		Stronger collectivism manifests existence of strong local institutional setup.		
7)	Security of tenure	Entitlement on assets created	Local traditions	Local traditional system exist to manage secured assets
			Revenue system	Revenue record provides security to entitlement.
			Agreements	In case there is no formal system agreements are drawn to secure rights.
		Use right/control	Traditions Formal recognition	Traditional usufruct rights are accepted and respected by the community.
8)	Participatory process	Participation in problem identification and prioritization		Role in decision-making will ensure identification of real issues and need based interventions.
		Participation in identification of solutions and prioritization of options		The most appropriate economical and efficient option will be decided.
		Participation in implementation		Need based activity get adopted and replicated.
9)	Supportive macro environment	Institutional and legal mechanism	Access to public resources	Added access to national resources express supportive system.
			Policy legal and social support	Enabling policy and legal framework enlarges role.
			Supportive mechanism	Procedure tailored to local needs enhance opportunities.
			No ban by Govt on resource use	Govt control discourage public role.

		Market	Negative competition	Conflicting policies, procedures and perverse incentives distort market.
10)	Satisfaction of goals	Local need		If activities are need based and suitable trade-offs promoted, Replication becomes easy.
		Better trades -off		
11)	Support mechanism	Dynamic sustainable and	Self-reliance	Either support mechanism should persist or create more independence by inculcating self-reliance, promoting process approach and linkages to sustainable delivery mechanisms.
			Process approach	
			Linkages	

List of NRM practices:

The list of NRM practices being pursued by the projects under review is given in **annex-v**

List of best NRM practices:

The practices, which have finally been considered sustainable on community basis, have been assigned to two main groups. The ones already stabilized, and the ones that have strong potential to become so. The list of best NRM practices observed in the projects, which were studied, is tabulated below:

LIST OF SUSTAINABLE ACTIVITIES

<u>S.NO</u>	<u>SECTOR</u>	<u>ACTIVITY</u>	<u>SUSTAINABILITY</u>	
			<u>Already Stable</u>	<u>Have Potential</u>
1	<u>Social Organization</u>	• RSP Model	✓	
		• NRM Model	✓	
2	<u>Capacity Building</u>	• Professional Skills	✓	
		• Gender income schemes		✓
		• Small business and cottage industry		✓
3	<u>Forestry</u>	• Private Nursery		✓
		• Farm Forestry	✓	
		• Forest Utilization		✓

		• Other Forestry based practices.	✓	
4	<u>Agriculture</u>	• Fruit Nurseries	✓	
		• Off –season vegetables	✓	
		• Orchards	✓	
		• Farming system	✓	
5	<u>Livestock</u>	• Livestock Extension Workers	✓	
		• Preventive measures		✓
6	<u>Entrepreneur Development</u>	• Rice husking		✓
		• Fruit nurseries	✓	
		• Off-season vegetables	✓	
		• Bee keeping		✓
		• Seed multiplication		✓
		• Mazri products	✓	
		• Market based Professional skills	✓	
		• Saving and credit	✓	
		• Agri-inputs business	✓	
		• Fish farming	✓	
		• NTFP based entrepreneur		✓
		• Women Income Generation activities		
		○ TBA	✓	
		○ Vegetable nurseries		✓
○ Kitchen gardening		✓		
○ Embroidery		✓		
○ Handicraft		✓		

	○ Sewing	✓	
	○ Poultry		✓
	• Extension workers		
	○ Livestock Ext. workers	✓	
	• Collective marketing	✓	
7	<u>PVIs</u>		
	• Water		
	○ Improvement and development of water channels	✓	
	• Other PVIs	✓	

Applicability of results

Most of the projects that were probed during the study are either on-going or have recently been completed. In majority of the cases, their support mechanisms are still intact. Keeping in view the comparatively short period of their implementation and given that some of these projects under the pressure of achieving set forth targets, at times, either had to abridge or bypass processes and offer excessive subsidies. It is difficult to judiciously conclude, whether the activities currently considered stable have, realistically, acquired long-term sustainability or not. However, these experiences have definitely setup the trends. The conclusions drawn by the study represent the existing ground situation with reference to particular temporal and spatial arrangements, and in no way, can be considered universally valid.

DESCRIPTION OF BEST NRM PRACTICES

1. Social organization:

1.1 Introduction:

Social organization is the development of the structure of roles/jobs through which people can devise plans and put them into action. Thus social organization is essential to tune the development to local requirements. As such in order to ensure effective interaction with state functionaries and to organize self-management at a village level a broad based representative local organization is required. History reveals that such organizations had traditionally been there, which have either, decayed due to replacement by state functionaries or have degenerated in the face of vanishing common resources. As such to rejuvenate them social organization is needed.

1.2 Evolution:

In the aftermath of world war-II, lot of resources were pooled for reconstruction and expeditious development, but due to exploitative system it simply multiplied debt of the poor countries and hindered stilling of benefits to the needy ones. Resultantly the Study of Urban, Rural and Development Alternatives (CEPAUR) stressed the need of re- creating the economy based on the Universal Fundamental Human Needs, which enunciates that:

“Development is a process in which a community of people strives to make it possible for all its members to satisfy their fundamental human needs and to enhance the quality of their lives”.

It was thus concluded that no one from outside could develop other people, except the community or a society itself. The energy and values arise from within the society, which express themselves in every day activities and in concrete plans and actions. It is possible to facilitate a community process in which people :-

- Start listening and support each other.
- Identify problems and needs, which are not being met.
- See what is blocking them from meeting these needs.
- Agree on ways of moving towards true satisfaction of these needs and plan action together to make lives more fulfilling.
- Pool resources internally and externally
- Initiate actions.

In Pakistan concept of mass participation was introduced in 1951, when Village Agricultural and Industrial Development (Village AID) program recommended

development of Extension Committees at tehsil level, consisting of rural leaders, progressive farmers and the representatives of various Government Agencies, Specialists and Extension Agents. Although the program emphasized participation but could not promote it, therefore, did not yield the planned objectives.

Thereafter, a participatory program through decentralized administration and flexible planning was initiated under USAID supported Comila Project. The Comila approach of rural works and integrated rural development was brought to Pakistan through Pakistan Academy for Rural Development under which “Integrated Rural Development Program Daudzai.” was launched. The success of Daudzai Project moved the government of NWFP to replicate this program all over the province but could not do so because of many reasons. However, the following foreign aided projects integrated this concept:

- Pak German Integrated Rural Development Projects (IRDP) Mardan.
- Pak Swiss Kalam Integrated Development Project (KIDP) in Swat
- Participatory management of Guzara Forests in Hazara through the co-operatives of the owners. The program was rolled back soon as it could not achieve desired results.

The concept of formal farmer organizations was introduced in irrigated agriculture through “Water Users Association Ordinance, 1981”. The AKRSP successfully demonstrated the concept of village organizations, which is now being replicated by NGO’s through out the country. Since this system could not develop organizations capable of making decisions pertaining to NRM, so later SFPMD devised a representational model and named local organization as VDC. Consequently there are currently two models i.e. RSP (membership) Model and NRM (representational) Model.

1.3 Objectives:

To pool local resources and collective wisdom by developing self sustaining, local self management structures aiming at wise management of their resources, to tailor development to local needs so as to improve socio-economic well being of masses and promote accountability and transparency through:

- Promoting collectivism;
- Creating common, flexible and recyclable working capital;
- Building local capacities / entrepreneurial skills to enlarge livelihood base; and
- Forging productive partnership and promote self-reliance.

1.4 Description of activity:

The social organizers visit the village and collect information about local social structure. Thus communities are invited to convene village assembly using local institutional mechanisms. Awareness is raised amongst the community along their common interests to carry across the concept of self-reliance and self-development

and to introduce objectives of program and broader parameters for support. Community is given time for internal discussion on this offer and to develop consensus to organize. Subsequently project staff facilitates them to organize into formal structure and encourage them to develop broad based executive committee, drawing members from all ethnic and economic groups, proportionally. Efforts are made to graft this structure on local traditional structures. Local organization is facilitated to develop its constitution and working procedures. Then their capacity is built through exchange visits, discussions, PRAs and trainings. Thereafter, plans are developed jointly and VO's are supported to implement these plans through a process approach. They are made partners in resource management and ultimately groomed to organize self-management.

1.5 Existing scenario:

There are currently the following two social organization models in vogue in Northern Pakistan. The one carved and pursued by AKRSP is called RSP or Rural Development Model, and the other as NRM Model.

VO of RSP model is mohalla or hamlet based membership body. It organizes more homogenous social groups. Local savings are promoted to develop common resource to ensure cohesion. It is being predominantly used as rural development model.

The NRM model was developed by the SFPMD, of the organizations developed through former method were considered incapable of taking decisions with respect to natural resources due to restricted membership. So these organizations are made more broad based and representative. The organizations are called Village Development Committees. Their membership is by representation. Natural resources are developed as common resource to create cohesion and provide recyclable working capital. This design focuses on improving access and encourages owners to forge partnership with landless for obligations in return of share in benefits.

1.6 Reasons of sustainability:

- The organizations of those areas where communities heavily draw on common resources may be more stable due to greater social interdependence and addressing basic needs.
- The receptivity of local community for self-reliance and organizing for management of their common resources is a key to raising strong social organizations.
- Organizations that address issues of common interest and ensure equitable distribution of benefits to all segments of society become more acceptable, command greater respect and are sustainable.
- Communities having greater consensus with respect to ownership and extent and procedure of making use of commons, particularly natural resources have greater cohesion and stronger possibility of associating into strong organization.

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- Support organizations, which optimally mobilize local resources and encourage establishment of linkages with sustainable delivery mechanisms help lend greater sustainability to local institutions.
 - Organizations grafted on local institutional base and respecting traditional systems get more space and acceptability.
 - Provision of social identity to local organizations by enabling them to plan, implement and monitor interventions result in raising their confidence level as local leaders.
 - The local economy is integrated and people draw on host of resources. As such their genuine interest could only be generated if their objectives and service package is comprehensive and have the capacity to address local problems.
 - Resource conditions may also encourage cohesion. If communal resource is intact and the accrual of stream of benefits is anticipated in near future, willingness is created amongst community to jointly manage it.

1.7 Future expansion scope:

Given that on the one hand poverty is rampant and external traditional resources are scarce to address local problems, while on the other the social organizations have proved their efficacy in addressing the issue of poverty and mobilizing local resources optimally. Thus existing scenario is extremely encouraging for extension of the system, especially keeping in view that there are countless success stories, system has been time tested and support mechanisms have acquired more experience and knowledge in handling social organizations and strive to create self-reliance from day one. As such the results of these projects towards poverty alleviation have encouraged support mechanisms, donors and communities to replicate the system. There is thus greater scope to extend it to all rural areas where poverty is predominant, people have more dependence on natural resources and alternate livelihood opportunities are scarce.

1.8 Geographic spread:

Social organization can be extended to all parts of northern Pakistan. However, the model needs to adjust the local conditions.

1.9 Strategy of expansion:

- Strong social organizations may be encouraged through process.
- Community may only be facilitated to raise its own organization. It should be nurtured as a local organization rather than a project bound organization.
- Organizations may be empowered to develop claim making power, authority, leadership and capacity to generate capital for self help development.
- Self-reliance may be inculcated since initiation and the organization may not be made solely dependent on project inputs only.
- Capacity of organization may be built through sound packages.

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- Planning and implementation may be devolved to the community organizations after developing their capacity.
 - Organizations may be encouraged to network and cluster freely. May be advised to develop linkages and facilitated to explore outside funding windows and remain non-political.
 - Support organizations may be encouraged to maintain continuous interaction with the communities.
 - Capacity of staff of line departments may be built in such a way that they do not impede strengthening of civil society efforts.
 - Provide legal cover to these organizations.

1.10 Linkage with SPCS:

It contributes to the following core areas of SPCS:

- Good governance and capacity building.
- Poverty alleviation.
- NGOs.
- Communications and education.
- NRM and biodiversity conservation.

2. Capacity building

2.1 Introduction:

The development activities were henceforth carried out either by the state run agencies through projects or by NGOs through specialized staff. Such development failed to address the chronic problems of poverty alleviation as well as arresting resource degradation, because the development gaps and their solutions were identified by the sponsoring and implementing agencies, while the recipient community was neither consulted nor involved at any stage. Thus, being alien to the interventions, the true benefits of development could neither trickle down to the poor nor did the community own those.

To address this situation, it was decided to take the community along to undertake participatory management. The community did not have the requisite skills to take over this new responsibility. To fill up this gap the concept of capacity building thrived. Consequently over the last two decades, almost every participatory project endeavoured to improve local capacities.

2.2 Evolution:

Traditionally capacity-building programs focused only on developing professionals to staff development agencies. The development so undertaken was merely prescriptive and symptomatic, as such failed to address the root cause of problems. The United Nations and other Development Agencies, dissatisfied with the results of such development assistance over three decades, began to revamp the focus of “capacity building” since early eighties. The new paradigm emphasized on strengthening local capability particularly at grass root level to enable communities to take on development challenges on their own, rather than external agencies doing the operational work themselves, which perpetuate dependence on external resources and expertise.

Since then the rural development and natural resource conservation projects are pursuing capacity building as an integral component of poverty alleviation programs, along with social organization and capital generation. In Pakistan AKRSP and KIDP were the pioneers to initiate capacity building programs in rural development and NRM respectively. Both these experiences were success. Consequently, over the last two decades, almost every project endeavoured to improve local skills. Initially these programs were on small scale and imparted, trainings only Gradually these culminated into more formal & systematic Human Resource Development endeavours as a mechanism to divert pressure from the scarce and threatened natural resources.

2.3 Objectives:

The objectives of capacity building are:

- To develop and continuously keep improving the institutional capacity, increase efficiency and improve requisite skills;
- To enhance human skill to improve management of resources, enlarge livelihood, create new career opportunities and improve social well being of community;
- To widen and enhance skill base of communities so that they can take over developmental challenges on their own;

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- To channelize the idle manpower into mainstream;
 - To minimize resource losses caused due to lack of capacity;
 - To create self reliance; and
 - To create ability to resolve conflicts.

2.4 Description of the activity:

Capacity building was considered skill development only, but by gaining more experience and insight the activity is now considered to include skills of the staff and individuals, improvement of institutional context, and entrepreneurial development to provide services to the community (which otherwise are not available) and to generate employment. The mechanism of capacity building implemented by the projects involves:

- Need assessment for training;
- Identification of trainees;
- Developing modules and identifying tools;
- Imparting training either by itself or by outsourcing, through training or on site and on job association.
- The capacity building programs address the following important categories of stakeholders: -

Staff:

The staff trainings include capacity building of both project & line department's staff, engaged in execution of project activities in particular and those of other line department staff in general. The staff trainings focus on building capacity to gradually sensitize and encourage them to adopt a facilitator's role instead of an implementer's to which they are accustomed. In order to render the development more sustainable, emphasis has now been laid on developing capacity of the line agencies to elicit policy support, build up critical mass for much needed reforms and institute participatory planning & implementation capacity in the respective departments.

This program has assumed very developed position in NWFP Forest Dep't. as FSP is striving to upscale the interventions tested on pilot scale to program level and institute participatory NRM approaches in the department.

Support organizations:

Realizing that the nascent village organizations require persistent help, guidance and interaction, the concept of engaging local NGOs in social organization pursuits and developing intermediary bodies for support has emerged recently. Therefore, all these projects laid considerable emphasis on developing and strengthening capacities of support organizations, NGOs and intermediaries (CBO, Clusters) to ensure sustainable support mechanism in post project scenario.

Communities:

It is obvious that due to colonial system the communities had never been allowed access to functionaries to devise, plan and implement development programs jointly. Now the government intends to do so, but due to persistent neglect in past, communities have no capacity to enter into more practical and productive partnership with the state bodies. As

such, in most of the participatory projects, despite good intention, communities cannot play an effective role unless their capacities are built. Projects strive to organize the communities and develop their capacities so that they could initiate productive partnerships while taking part in planning, execution, monitoring and evaluation of their resources.

Besides, efforts are made to build local capacities and to engage them into more income generating activities by gradually developing them into sustainable entrepreneurs.

2.5 Existing scenario:

Recognizing that capacity is comparatively more sustainable than many physical development activities, especially after termination of projects. NWFP forest department is laying permanent structures to inherit capacity building on program level through Forestry Sector Project. Similarly under new system of devolution of power, a new department of HRD has been instituted. The following capacity building efforts have achieved sustainability.

Developing training facilities:

Most of the projects endeavoured to develop and subsequently induct facilities into the regular programs or to upgrade the existing training facilities in the departments. FSP has internalized learning from capacity building programs of projects like KIDP, SFPMD, ERP, and SFDP etc. It has strived to upgrade capacity of SFS and created two institutional setups i.e., community training centres and interfaculty to lend sustainable training mechanism to the department.

Similarly in livestock and dairy development department AHITI has been created and is now being run fully by the department. In agriculture sector ATI is fully functional. AKRSP, SRSP, HRDI, SDPI, LUMS & leading NGOs have also developed their own capacity building structures to sell services.

Professional trainings to develop entrepreneurs:

Professional: Master Level trainings to the Project staff and members of line departments;

Technical training in field of livestock (Livestock; Extension Worker);

Poultry;

Bee keeping;

Tailoring, electrician, welders and plumbers; and

TBA.

Gender based enterprise development:

The following activities are being practiced at subsistence level especially as women activities to fulfil local requirements and to generate income for women.

- Women nurseries
- Fruit preservation and processing
- Poultry farming
- Sewing
- Kitchen gardening
- Embroidery

Small business and cottage industry:

Projects are encouraging communities and individuals to establish remunerative businesses like village shops, sale of agricultural inputs and supplies and rejuvenate dying traditional cottage industries.

2.6 Conditions needed for success:

Capacity building includes improvement of institutional context within which the organizations operate. Efforts to build capacity therefore need to locate the major constraints and gaps in capacity. Ownership is another important issue. There is no clear alternative about what is to be done in the absence of “ownership” or adequate institutional framework. The conditions needed for success of capacity building are:

- Compatibility to the selected strategies of poverty alleviation.
- On key places where capacity needs to be built.
- Is done at the appropriate level.
- Based on market demand.
- Technical appropriateness.
- Social appropriateness.

2.7 Geographic spread:

The capacity building is a continuous activity. It is imparted according to the local conditions to enable communities to organize better management of available resources, diversify economic base and enhance income. As such is required to be imparted everywhere, however, the focus and level of program may vary to suit local requirements.

2.8 Strategy of expansion:

- Should focus on organizations rather than individuals.
- Program level instead of an activity. A permanent program pursued where a mechanism of feedback is also ensured and skill development is tailored according to the needs.
- A concept of community specialist be developed and liaised with line departments and be mandated for updating the community through sale of service.
- Subsistence based skills be upgraded as market oriented, which will perform be re-burnished and updated both by the organization and the individual.
- Need based and only those involved who have real interest so that the skill trickles in the society.
- Market information be developed to create sustainability of the skill.
- Mechanisms be developed to avoid overproduction.
- Research and dissemination mechanism be developed for new entrepreneur and the quality of products.
- Availability of raw material ensured.
- Access to capital be ensured.
- Relief in tax on new entrepreneurs be made a policy package.

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- The sponsoring agency should develop training modules and get those linked/approved from recognized institutions to ensure the absorption of the trainees in the institutions.
 - Suitable person be picked up in consultation with the community who can live in the community and sell the services.
 - Professional specialization be encouraged.
 - Employ meaningful and effective monitoring and evaluation.
 - Select appropriate technical support providers.

2.9 Linkages with SPCS:

The capacity building will contribute to the following core areas of the SPCS.

- Governance and capacity development.
- Poverty alleviation
- Strengthening Non-Governmental Organizations.
- Natural resource management.
- Communication and education.

3. Private forest nursery:

3.1 Introduction:

Recognizing that centralized approaches of resource conservation have generally failed to provide enough attraction to stakeholders. It was realized that the environmental damage would not only continue, but also further exacerbate, unless private sector and local communities are taken on board by pursuing demand-led approaches for natural resource management. Thus decentralization of function of raising Forest Nursery, to private sector has invariably been pursued by almost all the projects studied, although its focus, extent, approach and methodology considerably vary from project to project.

3.2 Evolution:

Forestry is considered as one of the oldest professions mankind adopted for its survival, as interaction between man and forest for food, fodder, fuel and host of other products and services is as old as the history of mankind itself. Initially, livelihood was drawn from forests and nature. Gradually, to secure his life, humans developed interest in conserving natural resources occurring in their immediate vicinity, especially with regard to his hunting, food and subsistence needs. Later after realizing that the forests in their immediate vicinity were fast vanishing, they started efforts for its rehabilitation by protecting and inducing natural regeneration and subsequently manipulating nature to master ways and means of artificial regeneration. Thus the methods of sowing, dibbling, planting, and vegetative propagation evolved. This in turn gradually led to the idea of raising planting stock in nurseries. The nursery raising techniques and quality of seedling gradually improved when large-scale plantation programs were taken up and Forestry itself grew as an independent discipline. The farmers traditionally used to raise small farm nurseries to fulfil their own requirements. During last century public sector played a major role in rehabilitation pursuits, so to raise massive planting stock large scale nurseries were established in public sector. Although it played a significant role in furthering cause of forest and forestry, it jeopardized traditional efforts as well.

In 1982 US AID funded Forestry Planning and Development project launched an effort to gradually rejuvenate this decaying concept of raising private nurseries. Being well remunerative and successful experience other projects and programs quickly picked it up. Although during implementation period of the US funded project, the activity was considerably strong, but due to host of factors it could not get established purely as a private enterprise as yet.

3.3 Objectives:

The salient objectives of privatization of Forest Nursery are:

- To improve household incomes by developing nursery raising as an enterprise;
- To accelerate pace of painting the landscape green by involving more hands and availing more investment opportunities;
- To transfer avoidable functions from the public to the private sector;
- To enable local communities to raise nurseries on sustainable basis to meet local demand;
- To transfer skills of nursery raising to local communities.

3.4 Description of activity:

These projects encouraged the following three types of private nurseries:

- VDC/VO or WDC/WO nursery
- Farmer nursery
- School nursery

Excluding the last, for all such nurseries VO/VDC/WO/CBO normally play a pivotal role; as they place demand for it through moving resolution, identify the interested growers and propose potential sites. The staff of support organization after verifying technical and administrative feasibility allows raising nursery of preferred species of pre-determined size and quantities/qualities. Support organization draws formal agreements (Terms of Partnership) with the interested growers. To determines terms and conditions of agreement and specify role and obligations of each partner. The grower is normally supposed to arrange land, inputs and labour, whereas the Support Organization provides technical support, maintains quality control and ensures buy back of saplings at predetermined rates. Normally 25% of cost is paid either in cash or in kind (material), as mobilization advance. In case any input has been provided, the cost is recovered from the bill of grower at the time of effecting final payment.

3.5 Existing scenario:

In order to benefit the poorest of the poor, these projects normally grow nurseries of 5,000 to 20,000 saplings each. Nursery raising is fairly profitable and is picking up. The Forestry Sector Project is producing more than 10 million seedlings annually, through private sector, while, the NWFP Forest Department intends to devolve responsibility of raising fast growing species to private sector altogether and gradually stop raising broadleaved nurseries departmentally. Besides these project-sponsored nurseries, nurseries of other commercially viable tree species are also being successfully grown in private sector to cope with the market requirement. The following type of private nurseries can be witnessed in the private sector.

- Small-scale nurseries to meet personal requirement of growers at their doorstep.
- Small-scale commercial nurseries to meet domestic requirement in far flung and secluded areas, where transportation from outside is difficult and costly.
- Commercial ventures of:
 - Production of plants for farm forestry like Poplar in Northern Pakistan.
 - Aesthetic plants around urban centres.

3.6 Reasons of sustainability:

Pakistan has less than 3.5% of its area under productive forests. In the face of fast growing population, the regenerative capacity of our forests could not keep pace with the ever-growing demand. Thus due to unsustainable harvest, resource is faced with a threat of extinction. Due to acute scarcity, prices of timber and firewood have inflated to such an extent that growing forest trees in farmlands has become very remunerative. Thus there is considerable demand for saplings, which renders raising of nursery into an economically

viable proposition. The only factor that impedes mass scale operation is competition of state and provision of subsidy for farm forestry. The major reasons for sustainability of private nursery are enlisted below:

Nursery provides optimal and ensured returns as sale of planting stock has been guaranteed. Return is fairly quick as most of the saplings get plant able size within a period of 6 to 12 months.

Due to simplicity of technology nursery raising gets easily adopted.

- There is growing demand for plants in each locality. Farmers generally require multipurpose tree species, which are traditionally rarely grown in state nurseries. Hence owing to absence of competition, small-scale nurseries are thriving especially in areas where state nurseries are not available to meet requirement of growers at their doorstep.
- In far-flung and secluded areas, where transportation from outside is difficult and costly, local nurseries are thriving.
- To meet demand of market for those species, which are not commonly grown in state run nurseries.
- In certain areas tree culture has become integral part of local farming system due to market demand; like sports and industrial timber. Proven market of these commercial species stimulates nursery enterprise.
- Growers demand for aesthetic plants especially in Urban centres.
- State policy of promoting privatization.
- It is not costly as the inputs required are in the reach of the grower.
- Activity is demand driven.
- Tenure of produce is secured in favour of grower.
- There is no major risk involved.

3.7 Future expansion scope:

The situation is gradually changing and private nurseries are emerging, although slowly. However, in view of following new emerging opportunities, the change is bound to get major impetus in future:

- Forest department has started selling plants, though on subsidized rates, from departmental nurseries instead of free distribution.
- Donor projects are closing up and continuation of donor funding is getting more erratic
- Donors now insist on sustainability in new projects and demand gradual phasing out of subsidies as a policy mechanism.
- FSP is carrying out reforms and strives to privatize nursery raising. Once government would divorce the public sector nursery, market will definitely get established for those species, for which there will be demand in the market.
- The state resources are decreasing due to financial crunch resulting in reduced allocations day by day. Reduced availability of stock will encourage local growers.
- The development of skill in private sector will pave way for quick multiplication of private nurseries.
- Added communication facilities encourage large-scale commercial units at centralized places to feed nearby area.

3.8 Geographic spread:

1- Poplar is commercially viable specie as its production and marketing system has since been adopted locally. The state nurseries do not have appropriate stock, so private nurseries can be extended to all existing poplar growing areas such as Peshawar, Mardan, Charsadda, Nowshehra, Sawabi, Bunair, as well as other irrigated area of DI Khan, Kohat, Bannu, Hangu, Malakand, Lower Swat, Haripur, Mansehra, NA and Chitral as well.

2- Besides Poplar, Bakain, Simal, Mulberry, Babul, Willows, Alnus and Shisham have also commercial usage, so have potential for promoting private nurseries.

3- Government has neither subsidy nor is competing for aesthetic plants, as such business of raising nurseries of aesthetic plants has flourished mainly in Haripur and Peshawar and is developing in other urban centres. The nurseries of these species can be encouraged in major towns and areas adjacent to these consumption centers along the road having good communicational infrastructure and favourable climatic conditions through out northern Pakistan Government nurseries also do not contain requisite number of multi-purpose tree species (MPT). By providing market information, identifying appropriate species, assessing demand, nurseries of MPT can be promoted through out rural areas in northern Pakistan.

4- Currently main timber species are exclusively grown in state nurseries. Nurseries of Timber species can be adopted in wood scarce fringes in remote areas like Upper Chitral and part of Northern Areas at this point of time. But can be promoted all through Northern Pakistan once the government withdraws subsidy and competition.

3.9 Strategy for expansion:

- Subsidies and competition may be gradually withdrawn to enable private sector to develop.
- Capacity building of nursery growers and development of information material is essential.
- Market information, channels and linkages need to be ensured.
- Department may ensure continuity of professional and technical support.
- Taxation system may be made favourable to farmers and community.
- Retrogressive hindrances may be removed like ban on cutting of poplars in pole stage for export to Afghanistan in NWFP.
- Regular survey of market may be conducted to work out demand and production. This information may be made available to farmers and they may be facilitated to orient their production accordingly.
- Create awareness amongst the masses to develop market for seedlings.
- Ensure access to quality inputs.

3.10 Linkages with SPCS:

Privatization of forest nursery will contribute to the following core areas of SPCS.

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- Governance and capacity building.
 - Poverty alleviation.
 - Education.
 - Urban environment.
 - Sustainable industrial development.
 - Natural resource management.
 - Biodiversity conservation

4. Farm forestry:

4.1 Introduction:

In the wake of current awful environmental degradation, it has been appreciated that state resources alone through centralized approaches of resource conservation cannot arrest erosion of resources, unless private sector and local communities are effectively involved. Since farm forestry is an indigenous practice and has the potential to sustain itself, therefore it has been promoted by almost all the projects studied.

4.2 History/evolution:

The farm forestry is a long established traditional activity. It evolved probably as early as the cultivated agriculture itself. Initially human activities were mainly confined to protection and management of naturally regenerated woody biomass only, but gradually the scarcity of timber and fuel wood persuaded the human race to intensify its efforts to supplement the nature. The holy Quran confirms that farm forestry is a long established ancient practice. (Surah XVII, Ayat 32)

“Coin for them a similitude, two men into one of whom, we had assigned two gardens of grapes and we had surrounded both with palms and had put between them tillage.”

The recorded history of Indo Pak reveals that social forestry apart from being part of Muslim faith, is also deeply embedded into local culture, ethos and mores. That’s why farmers over here are not only well versed with nursery raising and planting techniques, but are also fully familiar with other indigenous practices of plant propagation, such as sowing, broadcasting of seeds through animals, planting of cuttings, bulbing and layering etc. Similarly tree improvement through budding, grafting and top working is also well entrenched in local culture and traditions. It is however, an admitted fact that despite being an old and indigenous activity, it has comparatively lower priority for resource allocation owing to poverty. With the emergence of international concerns for environmental degradation, subsidies were introduced to expand the coverage. In Northern Pakistan farm forestry was promoted for the first time by the Forestry Planning and Development Project in 1984 in southern districts of NWFP. It gradually extended to almost all parts of NWFP by the projects conceived and implemented in northern Pakistan thereafter. This has no doubt increased production of woody biomass considerably on private lands, but at the same time has negatively affected the private initiatives as well.

4.3 Objectives

The salient objectives of promoting the farm forestry program are enlisted below:

- To integrate trees with crops on agricultural fields to diversify farm outputs and increase household incomes;
- To institute self-sustaining farm forestry system;
- To narrow down gap between sustainable supply and demand of timber and firewood;

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- To divert pressure from designated forests by producing sizeable oasis in arable lands to meet market demand.

4.4 Description of activity:

Farm forestry is planting of trees and other woody vegetation on individually owned arable marginal lands, agricultural fields and courtyards, not merely a free distribution of plants. The basic actions required to make it a popular and sustainable market based activity are: -

1. Assessment of species wise demand of saplings.
2. Liaising with and organizing farmer groups.
3. Preparing time schedule for execution of activities
4. Developing plan of supply of plants
5. Decide design of planting of trees in farmlands. Commonly used designs encompass planting as single tree, on field bunds, or in linear fashion, shelterbelts, or in blocks.
6. Encourage farmers to undertake collective plantings in groups to economize time and resources.
7. Advise and facilitate the farmers in all technical matters particularly with respect to pit digging and planting activities to improve technical rigor of the pursuits.
8. Monitor the activities, assess the gaps, educate and facilitate the farmers to improve upon the situation.

As per normal practice plants are distributed from the nearest farmer nursery free of cost or on extremely subsidized rates. Farmers as per ToP are made to accept responsibility of arranging labour for planting, watering seedling and to protect them. To create incentives for group working and bring more areas under tree cover, the Forestry Sector Project provides 50% subsidy for planting if three or more farmers group together to undertake planting. Support mechanism is responsible for arranging:

- Training and extension;
- Technical support;
- Free saplings of desired size, quality, and species;
- Monitoring to improve quality of plantation.

4.5 Existing scenario:

Farm Forestry is one of the major activities, which is now invariably promoted by almost all the projects and support programs. At present apart from continuation of local initiatives, these projects are implementing the program as per following details:

- Almost all the projects encourage free distribution of seedling. But in order to avoid subsidizing rich most of the projects fix upper limit for distribution of free saplings:
- Under Individual planting farmers are encouraged to identify location and site of planting and dig pits before getting seedlings. Plants are supplied free of cost and owner is expected to raise them at their own without any additional incentive
- Under Group forestry program (introduced by SFPMD) three or more farmers are encouraged to undertake collective planting. Under this program apart from provision of free seedling they are also provided 50% of the planting cost to encourage them to undertake plantings in groups. As such the output will be commercially marketable. Once

they will collectively fell, convert and market the output, it is expected that under market demand commercial farm forestry will get established,

- In some projects seedlings raised in private nurseries are purchased by the projects and distributed free of cost to VDCs, which in turn sell these seedlings to farmers. In this way farm forestry is developing into self-sustaining activity on one hand and collective capital is generated on the other.

4.6 Reasons of sustainability

Farm forestry program is very effective and has considerably contributed to increase in woody biomass from farmlands. By now, major bulk of market requirements especially for tobacco curing, sports and match industry, pottery and furniture are met from these farms. Currently, 58% of timber, 90% of fuel wood and bulk of industrial raw material is being supplied by farmlands mainly due to following reasons.

- The tenure of trees growing in privately owned farmlands is more secured and owners have the liberty to utilize the output at their sweet will.
- Legal freedom on sale/ use of output produced in farmlands.
- Lot of products of daily need like food, fodder, protection of soil, soil fertilization, windbreaks and shade in summer make multipurpose trees as best option for planting. .
- No additional cost for watering and protection.
- Low investment and simple technology.
- Out migration and absentee ownership encourages tree cultivation over fallow arable lands.
- Ever widening gap between demand and supply rendered marketing easy and more profitable.
- Free distribution of seedlings under farm forestry programs encouraged added planting.
- Privatization of nursery provided opportunity to raise planting stock at doorsteps of the farmers.

The traditional farming systems are fairly established in many parts mainly due to the following reasons:

- Farm forestry has been established well in forests deficient, secluded, remote, and land locked pockets like Upper Chitral and Northern Areas for local timber and fuel wood security.
- The emergence of new opportunities or catastrophes worked as a catalyst, to encourage farm forestry. Due to unprecedented influx of Afghans and their cattle in FATA, eucalyptus planting got major impetus to fulfil the market demand created by the special circumstances.
- Extension of irrigation network to new areas like D.I Khan and Bunair also created opportunities to intensively cultivate farms and integrate planting of commercially viable tree species to optimize income.
- Established industrial demand for species like Poplar in Peshawar valley and Babul in Sindh to promote farm forestry systems locally.
- Demand for aesthetic plants near habitations especially major urban towns also promoted courtyard planting in suitable areas

4.7 Future expansion scope:

There is definite scope for the expansion of the activity further due to.

- Bulging gap between demand & sustainable supply of timber and firewood.
- Established market for a host of products and services generated by the farmlands.
- Easy availability and sustained supply of raw material.
- Availability of vast land.
- Renew ability of the resource, provide opportunity for replacement after each rotation on the same site.

4.8 Geographic spread:

In irrigated areas farm forestry is already fairly established and require further boosting by improving market mechanism, market information, linkages and policy support.

In barrani areas farm forestry is being practiced, but on comparatively smaller scale. By identifying appropriate species, planting techniques, marketing support, favourable mechanism and supportive taxation policy support, it can be further consolidated through out northern parts of the country. This activity requires further research and needs to be extended and diversified beyond existing situation in barani areas, as waste and marginal lands are abundantly available over here for productive use.

4.9 Strategy for expansion:

- Subsidies may be gradually withdrawn and market based mechanism may be encouraged
- Growers association may be raised to introduce collective marketing.
- Market information, channels and linkages may be encouraged.
- Access to technical package catering for silvicultural requirement of each species, its utility and utilization pattern may be ensured.
- Taxation system may be made favourable to farmers and community.
- Capacity building is essential.
- The demand and production information may be generated to orient the program to market requirements.
- Future market trends may be worked out to help farmers take long-term decisions.
- Creation of conducive environment between owners and tenants regarding share in tree produce.

4.10 Linkages with SPCS

It contributes to the following core areas of SPCS.

- Governance and capacity building.
- Poverty alleviation.

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- Sustainable industrial development.
 - Natural resource management.
 - Biodiversity conservation.

5. Forest utilization:

5.1 Introduction:

This system was carved out by the SFPMD to attain mass support by generating recyclable capital at a shorter rotation through participatory management of natural resources (Shrub lands), as such was named “Control Use of Shrub Lands”. Besides, the project also tried to improve management of Oak Forests. Thus a more common term of “ Forest Utilization” has been adopted for the study to describe this system. This has been done, so that the following four types of communal forests could be effectively covered.

- Scrublands in subtropical zone, containing *Dodonea*, *Acacia modesta* (Phulai) and other broadleaved associates, which can be managed on short rotation and can be regenerated through inducing regeneration and coppicing;
- Mazri palm which is a special type growing in sub tropical zone and can be regenerated both through regeneration and coppicing;
- Plantations of fast growing broadleaved species that are ready for harvesting at shorter gestation; and
- Natural Oak Forests managed for animal fodder and fuel wood supply.

5.2 Evolution:

When human beings came to earth as cave dwellers, they were fully dependent on natural resources. Initially their entire livelihood was drawn from forests and nature only, making the history of forest utilization as old as that of human race itself. Gradually to secure his life, mankind developed interest to conserve natural resource in his immediate vicinity, especially with regard to his hunting, food, shelter and subsistence needs giving birth to local system of resource use and benefit sharing. This system was practiced successfully as the resources were abundant and population was scarce.

With the advent of British rule, changes occurred to such an extent in governance system, tenure of Forestland (nationalization), transportation and marketing infrastructure, and economic monetization that gradually the indigenous practices and management system started eroding, although these degenerated traditions continue to be important component in management of natural resources even today.

In certain tribal pockets, where government control was weak and local traditions were strong, indigenous system remained in vogue till recent past, and well-defined system of benefit distribution prevailed. During the seventies, dispute over ownership in such areas with unsettled tenure resulted in complete annihilation of this resource or destruction to an extent that it could no longer sustain use. As such even in these areas local management systems degenerated. The SFPMD strived to restore resource and rejuvenate local system once again. As such participatory forest utilization system was introduced.

5.3 Objectives:

The salient objectives of introducing this activity were:

- To improve socio-economic well being of people by optimizing returns, improving access to and control over natural resources;

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- To encourage local communities to sustainably manage their resources, by putting up a system that can generate a stream of benefits and ensure equitable distribution of benefits so accrued;
 - To determine economic values of village commons and demonstrate that frequent returns can be achieved through organizing better management;
 - To satisfy local needs and generate working capital for village development and resource conservation through marketing of surplus produce; and
 - To demonstrate the benefit of plantations and secure peoples interest for their sustainable management.

5.4 Description of activity:

The existing shrub land or plantation is selected with consensus by VDC, and resource is assessed to develop utilization plan. The area is divided into appropriate number of blocks to ensure cyclic returns and protection of soil. No. of blocks are determined on the basis of growth potential of specie, rotation and extent of the area, so that local needs could be satiated annually and surplus marketed to fetch cash. The other blocks are afforded protection and rotated as per crop requirement, till crop becomes harvestable. Normally a comprehensive utilization plan is drawn which contains felling program and system of satisfying local and market needs. It also spells out benefits distribution system. At certain places domestic use is allowed free of cost, while at others even local use is subjected to fees and taxes. Out of sale proceed a part is ploughed into Village fund to source common development pursuits and for reinvestment into building natural resource capital. This system is successfully being applied in scrub forests and can be extended to other types having short rotation.

5.5 Existing scenario:

Scrub forests and harvestable plantations of fast growing broadleaved species cover sizeable areas in NWFP and AJK. None of the common forests have a system of its perpetuation and sourcing second-generation crop, except a few scrub forests and plantations in Malakand. As such it is feared that if harvesting has not been encouraged, people would not take interest in management of their commons and consequently would not agree to reinvesting into NRM pursuits. At many places plantations have been harvested and either no effort has been done to perpetuate it or entire revenue has been availed by owners and nothing has been earmarked for benefit of the entire community. Thus NWFP Forestry Sector Project considering the system beneficial to institute sustainable NRM ventured to upscale it, besides introducing JFM. Similar efforts are under way at DKP and AKRSP as well. As such it seems essential to extend this concept to other suitable forest types and areas to consolidate conservation efforts.

5.6 Reasons of sustainability:

- Forest Utilization ensures cyclic generation of benefits, so apart from fulfilling local needs, (demand driven) it provides much needed cash to fund common pursuits and regenerate the resource.
- Due to security of tenure instituted by agreements, the entire community draw on agreed benefits, so broader ownership.
- Spirit of collectivism is promoted by developing collective capital and increasing access.

- This system is a true replica of withered Local management, and is socially and culturally acceptable.
- Accrual of ensured benefits are expected, so hold promise to stakeholders.
- Management technology is simple and graft able on local traditional system.
- It is risk free.
- Market is fully established to consume the marketable surplus at competitive price.
- The scrub forest with short gestation ensures returns on short intervals.
- Adoptability to silvicultural requirements
- Supportive macro environment as communities can manage forests, as they feel beneficial for them.
- The SFPMD promoted the activity through process approach.

5.7 Future expansion scope:

There exist sizeable scrub forests, Mazri forests and established plantations through out northern parts of the country, where utilization can be practiced to sensitize masses and level their opinion towards effective management and sustainable use. The scrub forest of Haripur are designated Reserved forests and have degenerated and reached the stage of extinction through JFM, where benefits are shared with community, as is done in India, can be redeveloped and sustained.

5.8 Geographic spread:

Scrub: Lower Dir, Malakand agency, Bunair, Besham, Thakot, Kohat, Hangu, Nizampur, Mardan, Swabi, Haripur, subtropical areas of AJK and Tanawal area in Abbottabad and Mansehra.

Mazri: Kurram agency, North Waziristan agency, Orakzai, Hangu, Kohat, Karak, and Panyala.

Plantation: Harvestable plantations in Dir, Swat, Bunair, Alpuri, Malakand, Kohat, Hangu, DIKhan, FATA, Haripur, and other areas where fast growing broad leaved have been planted.

Oak: Chitral, Upper Dir, Kalam, Gilgit, Parts of AJK and Kohistan.

5.9 Future strategy:

The aforementioned conditions, which are responsible to lend sustainability to this practice needs to be ensured. The practice can be promoted through following strategy.

- Organize people into a local self-managing unit, devise management system and agree on obligations and distribution of benefits likely to accrue.
- Support organization has to adopt Process approach to institute self-perpetuating system by cultivating ownership and self-reliance.
- Access to market information.
- Demonstration to educate new communities about the system is necessary.
- Cross-visits of communities.
- To generate capacity to develop recyclable capital and plough a part of it into Village Development Fund.

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- Capacity building of local organizations for participatory planning and implementation.
 - Silvicultural package to work the forest should be simple and accessible to all.
 - Technical support should be persistently made available to local communities..
 - Participatory process for making decisions with consensus.

5.10 Linkages with SPCS:

It contributes to the following core areas of SPCS.

- Governance and capacity building.
- Poverty alleviation.
- Natural Resource Management.
- Biodiversity conservation.
- Education.

5.11 Other Forestry based practices:

Although, these projects had not ventured in certain areas of NRM, but in reality following practices are already traditionally well rooted into local culture, which being sustainable, need special mention.

- NTFP.
- Seed collection.
- Controlled grass cutting.
- Terracing in agricultural fields.

5.12 NTFP:

The forests of Northern Pakistan yield a number of products and services that play the most important role in our economy. Among these timber and firewood are called major forest products and all the other as minor products. These minor forest products individually may not be of great economic importance but collectively their value is immense. The NTFP includes products like medicinal plants, Mazri, honey, silk, mushrooms and host of other products. The NTFP is decidedly an activity, which is traditionally more stable and remunerative at community level. However due to state management the main focus of state functionaries remained confined to timber management only. Even these projects have not strived to exploit this treasure significantly.

Mazri palm is grown in southern sub tropical areas of NWFP. It is used as fuel and its leaves are woven into brooms, mats, baskets, hand fans and handicrafts. It is a cottage industry and good source of income, especially for women.

Medicinal plants grow in a wild state and are harvested in unscientific manner as a side business and are sold at nominal rates to the middlemen. These can prove much profitable if properly managed.

Honey and silk are important forest products and can be practiced both at subsistence as well as commercial scale under suitable conditions.

Our mountain areas are source of a number of mushrooms, which are collected for local use. One of these i.e. Guchi (*Morchella* species) is collected and marketed at very high rates. But so far there exits no facility to guide collectors to render this activity more scientific. As such collectors are sustaining heavy losses annually.

5.13 Seed collection:

Seed collection is a sustainable-privatized activity. Due to established demand of seed, private entrepreneurs have emerged on national level, which deal in international trade of export and import. At local level seed collection has become an established practice.

5.14 Controlled grass cutting:

The controlled grass cutting is an established traditional practice. People protect the private and commercial grasslands for grass cutting, especially, in upper parts of Northern Pakistan. Normally grass was cut through asher- an institution of collective grass cutting. While driving in this tract one comes across with well-protected chunks of grasslands set aside for grass cutting for wintering. Similarly heaps and stores of cut grass in remote areas is part of life for winters.

5.15 Terracing:

Due to poverty and land hunger, agricultural lands are being carved out over sloping hills. This cultivation of non-terraced sloping hills necessitate land levelling and development of terraces over sloping lands to arrest erosion of fertile soil. Since terracing in agricultural lands is an activity, which ensures optimum returns and conserve land and its fertility is thus an established tradition. In hilly areas terracing of agricultural land is given the highest priority subject to affordability. However, quality of levelling and terracing vary considerably across the area and with in the area as per technical know how and resource availability.

6. Fruit Nursery:

6.1 Introduction:

With the realization that the government can easily devolve most of its functions to the private sector or local communities to improve governance and concentrate on provision of only a few essential services with excellence to its citizens, efforts were started to gradually off-load the government of all avoidable functions. Thus privatization of the function of raising Fruit Nurseries has invariably been pursued by almost all the projects studied.

6.2 Evolution:

Man learnt to culture fruit plants from the time immemorial. It was traditionally a private activity, which was taken up by state functionaries in the middle of the last century to augment pace and to improve quality of seedlings. It was initially taken up by the agriculture department, but was subsequently devolved to a state run autonomous board, called Fruit and Vegetable Development Board (FVDB). Lastly with the dissolution of the board this activity has been completely transferred to the private sector. Now certain projects and support organizations are facilitating private nursery growers to raise quality plants, build their capacities and arrange certification to ensure perpetual quality control.

6.3 Objectives:

The salient objectives of privatization of Fruit Nursery are summarized below:

- To transfer avoidable functions from the public to the private sector;
- To improve household incomes by developing fruit nursery raising as an enterprise;
- To accelerate pace of raising orchards by involving private sector having extra manpower and more investment capacity;
- To enable local communities to raise nurseries to sustainably meet their own and market demand;
- To transfer skills of nursery raising to local communities;
- To improve production of tradable fruits, which can be produced in hilly areas of the country; and
- To bring economic self-sufficiency by increasing orchards and boosting trade of fresh and dried fruits.

6.4 Description of activity:

Besides assisting existing growers, the projects strive to identify other progressive and willing nursery growers to fulfil the demand of fruit plants locally wherever fruit nurseries are not available or existing nurseries cannot meet demand. Projects endeavour to provide technical support, especially with respect to selection of species and varieties, provision of improved virus and disease free planting material of true type for multiplication. The projects provide information about market and about the quality standards of fruit seedlings and help them in linking with the federal seed certification and registration department.

6.5 Existing scenario:

Even before dissolution of board 100 fruit nurseries in Malakand were enumerated by MFVDP, in 1988-89. These nurseries produced 1.2 million plants of which 50% were produced in private sector. Now the situation has become even more favourable and conducive for private nurseries, as the Government has completely divorced the function, abolished subsidies and developed long-term vision and strategy to support privatization. The state functionaries provide support through

- Research and technical facilitation.
- Supply of quality planting stock.
- Knowledge on best nursery practices.
- Developing training material.
- Best nursery for demonstration.
- Cultural practices
- Appropriate tree types
- Meet specified standard

6.6 Reasons of sustainability:

The salient reasons, which rendered the activity sustainable, are produced below:

- Established market for the products.
- Optimal economic returns.
- Affordability of the growers.
- Security of tenure of the stock produced
- Social acceptability.
- Technological adoptability.
- Supportive macro environment, as neither there is competition nor any perverse incentive to curb the activity.
- The activity is free of major risks, except mortality of seedlings, for which technology is established.

6.7 Future expansion scope:

Given the ever-increasing demand for fruit in local market, growing export opportunities and subsidies given by projects for raising orchards, the demand is increasing for supply of improved plants. Since Government has abolished competition, so there is a definite scope for expansion.

6.8 Geographic spread:

Fruit nurseries are fully sustainable, as government has withdrawn both subsidies and competition. Since the entire northern Pakistan provides opportunities for propagation of orchards, therefore, nurseries of climatically growing appropriate and marketable species can be extended to all parts of the study areas.

6.9 Strategy of Expansion:

- Support mechanisms should strive to ensure perpetual supply of inputs by encouraging local entrepreneurs or co-operative system.
- Local capacities may be built to make their partnership real and practicable
- Research may be tuned to the market requirement and made accessible to users.
- Market information may be made available with respect to demand, location, quality to avoid market failures.
- Certification efforts may be strengthened to ensure quality of output.
- Farmer's networks may be encouraged.
- Government should ensure availability of quality seed and propagation material for genetic purity.
- Persistent technical support may be made available to the farmers at their doorsteps.
- Further export possibilities to agricultural outputs may be explored.
- Demonstrations are necessary to encourage diffusion of innovations.

6.10 Linkages with SPCS:

- Governance and capacity development.
- Poverty alleviation.
- Sustainable industrial development.
- Natural resource management.
- Biological diversity.

7. Off-season vegetables:

7.1 Introduction:

Vegetables are one of the essential items of food both for rich and poor. Their role in our diet needs no emphasis as they are the rich and cheap source of vitamins and minerals and are regarded as protecting foods well equipped to combat malnutrition.

In Pakistan vegetables consumption is still very low due to low production resulting in high costs. Per capita consumption is still 115 gm compared to the per capita consumption of 350gm in the developed world.

Pakistan is bestowed with a variety of climates. Vegetables can be grown in the country at different locations at different times during the year. The farmers grew vegetables at different times in a year for local consumption. However with the development of communication infrastructure when these vegetables were transported to other parts of the country in a different season, the term “off season” was coined for the commodity. In this context off season vegetable means *“Production of certain vegetables in areas having suitable agro-ecological conditions for their production, during a time period, when it is not possible to produce them in the areas to which they are marketed, are called off season for that particular market”*.

7.2 Evolution:

Potato is one of the vegetables having longer shelf life with multiple uses. This vegetable was/is produced in the plains of the country for which bulk of seed potato was/is needed. To meet this demand efforts were made to test production of potatoes at different elevations, which could be used as seed in the plains. The efforts met success in Kaghan valley, but the production was not enough to meet the seed potato need in the plains. Subsequently it was introduced in similar ecological zones of upper Swat valley, Northern areas, Dir and Chitral districts. The venture was a success and the farmers adopted the practice to the extent of monoculture.

This continuous monoculture gradually resulted in a very low yield due to diseases and pests multiplication in the area. The production, though low, was more beneficial than the traditional cereals and therefore the monoculture kept continued. At this point in time need was felt for introduction of equally beneficial crops for breaking the monoculture in order to maintain the income level.

In this quest various vegetables and fruit crops were tested. Vegetables being short duration crop were found to be the most promising.

Having tested the technical aspect and economic returns, the second step was its multiplication in the farmer’s fields for commercial production. To achieve this objective two major steps were taken. Firstly the farmers were promised risk converge. The farmers were to be compensated if the income from the vegetable was less than potato’s. Secondly the farmers were initially helped in the marketing of their vegetable produce and they were linked with appropriate markets for marketing of the produce on sustainable basis.

7.3 Objectives:

- To improve socio-economic well being of farmers by optimizing their farm income through introduction of off-season vegetables;
- To promote commercial vegetable production by making use of the prevailing climatic conditions of various agro-ecological zones;
- To expand the production season of fresh vegetables and ensure constant supply to the market;
- To package technology for wide scale adoption & dissemination to other areas having similar ecological advantage of producing vegetables in the lean period;
- To ensure improved and certified seed production. To decrease dependence on single crop which leads to market gluts; and
- To train growers in vegetable growing and transfer technology to them.

7.4 Description of activity:

Off-season vegetables are produced for particular markets. The main features of off-season vegetables are:

1. They receive considerably high prices compared to normal season production.
2. The area of production is limited.
3. Supply is limited compared to normal season production

For off-season the following practices are adopted:

- Winter crops are grown in northern temperate zone in summer.
- Early and late maturing varieties of vegetables are grown through adopting suitable technologies (tunnel technology) in the off-season to get benefit of high price.

The off-season vegetables were initially grown in project nurseries to conduct adoptive research and to demonstrate activity. Farmers from various organizations were briefed about it and given cross visits. Trainings about selection of crop variety, land preparation, nursery raising, fertilizer application, transplanting of plants in field, control of pests, diseases and weeds and agronomic practices were organized. They were encouraged to raise off-season vegetables and assured of risk coverage. Once raised were facilitated in marketing, grading and packing. This fetched them good returns. In most of the areas it initially catered local market demands and gradually made access to better markets in far off places.

Now almost every where inputs supply mechanism in private sector and collective system of transportation has been developed, which reduces cost of transportation and enables them to quickly make supply to the market where they can get optimum returns.

7.5 Existing scenario:

Production of off-season vegetable has become normal practice in the valleys of Kaghan, Swat, Chitral and Northern areas with out any external support. Off season vegetables produced include potatoes, turnips, cabbages, tomatoes and peas, all these are marketed in the down country markets, while some other vegetables are also produced for local consumption

only. In Peshawar valley certain vegetables are produced with the help of tunnel technology for early supply to market.

7.6 Reasons of sustainability:

- Edaphic and climatic conditions are suitable for production at a point in time when the same cannot be produced in the plains.
- Market is established and demand is more than the supply.
- Transport channels are good and fresh produce can be easily transported to markets.
- Projects provide information about market lean periods, which enable farmers to harness this opportunity. The returns are 3 to 4 times higher than seasonal incomes.
- Due to organizational improvement concept of collective collection, transportation and marketing enabled farmers to fetch greater benefit, which henceforth was obtained by the middleman.
 - Quality seed is available in the local market.
 - Farmers are equipped with production technology.
 - Farmers are linked with the markets.
- Production is in bulk and farmers can easily transport the produce at low cost.

7.7 Future expansion scope:

The practice can be further extended because of two factors. Firstly, the market is still short of supply and the produce can be easily marketed at good prices.

Secondly, there are still areas where edaphic and climatic conditions are suitable for off-season vegetable production. Such areas include all the northern parts of the country where climate is relatively cold, water is available and transport channels are sufficiently developed for marketing the produce in fresh.

7.8 Geographic Spread:

Activity can be practiced all through the northern parts where there is water and skilled manpower available and edaphic and climatic conditions are suitable.

7.9 Strategy of Expansion:

- Awareness raising regarding importance, demand and market channels.
- Enhancing skills of farmers
- Availability of quality seed, pesticides, fertilizers and plant protection equipment through local entrepreneurs.
- Marketing information, identifying lean periods, species demanded and quantity required.
- Crop calendars to help farmers.
- Encouraging collective transportation & marketing.
- Enhancing access to capital to obtain inputs.
- Information leaflets on each vegetable
- Development of village specialist, who can provide services on cost.

To extend the practice into other areas having suitable conditions the following process is adopted.

1. Various vegetable species are tested in research plots for growth and production.
2. Economic analysis is done in comparison with the traditional crops grown in the area.
3. The high value species are tested on the farmer's field with guarantee of risk coverage.
4. Farmers are trained in vegetable production.
5. Farmers are facilitated in marketing of the produce till they are well conversed with the trade.
6. Mechanism is developed for the availability of the inputs at local level.

7.10 Linkages with SPCS:

- Poverty alleviation.
- Sustainable Natural Resource Management
- Biological diversity.

8. Fruit Orchards:

8.1 Introduction:

Appreciating that poverty is the root cause of existing awful ecological devastation in the northern hilly areas, where alternate sources of living are scarce. The projects started designing and introduction of viable entrepreneurs to enlarge livelihood sources and decrease dependence on natural resources. Given climatic suitability, Fruit orchards that had proven economic viability in plains, were introduced in mountainous areas. Since it proved extremely successful, both for economic and ecological reasons so were quickly picked up by all NRM projects.

8.2 Evolution:

Fruit trees are grown from the time immemorial. Initially fruit trees were grown on subsistence scale for local food security. With the improvement of infrastructure and development of technology (of fruit processing) gradually concept of growing fruit trees on commercial scale thrived. With the introduction of canal system raising of orchards became feasible and gradually became part of local farming system. Consequently large scale orchards of Mango, Citrus, Banana, Guava, Peaches, Plums, Apricots, Persimmon, Date palms and Grapes emerged in different parts of country depending upon climatic conditions.

The KIDP in order to introduce rotation of potatoes with other economic crops initiated encouraging fruit orchards in Kalam. Although KIDP failed to do so but fruit orchards were promoted as established economic crop. Contrarily AKRSP promoted orchards as income generation activity to address the poverty i.e. the root cause of environmental degradation. Though other projects before AKRSP had worked on promotion of horticulture, their focus and mode was not as embracive. AKRSP worked on improving quality of existing species, introduced new species and varieties and improved technology. Since it quickly established as a remunerative crop so has been adopted by all NRM and rural development projects.

8.3 Objectives:

- To improve socio-economic well being of farmers by optimizing their farm income through introduction of orchards;
- To promote commercial fruit production by capitalizing on the prevailing climatic opportunities offered by various agro-ecological zones in northern Pakistan;
- To package technology for wide scale adoption & dissemination to other areas having similar ecological advantage;
- To train growers in fruit culture and transfer technology to them;
- To improve production of quality fruits, which can be produced in the mountainous areas of the country;
 - To bring economic self-sufficiency by increasing orchards to boost trade of fresh and dried fruits.

8.4 Description of activity:

The projects promote fruit orchards through a part of an integrated package and in some cases are also providing subsidy up to 50% of the cost of seedlings, if orchards are grown. In majority of the cases willing farmers put their demand through resolution of village committees, but in case projects are not raising organizations progressive farmers are identified. After assessing site suitability species to be planted is decided. Project provides technical know how and improved varieties of fruit plants and farmer plant, maintain and protect them. In order to ensure sustainable capacity, agriculture extension workers are trained and encouraged to sell their skill especially through advice, technical support, pruning, pest and disease control.

8.5 Existing scenario:

Large-scale orchards are common in all parts of the country depending upon size of land available, climatic advantage, technology and planting stock availability. Currently Apple is grown in Gilgit, Chitral, Upper Dir and Swat. Citruses are grown in Lower Dir, Malakand, Haripur and Mardan. Guava is grown in Haripur, Kohat, Bunair and other suitable places. Besides Persimmons, Peaches, Plums, Apricot, Strawberries and walnuts are grown in northern part of the country.

8.6 Reasons of sustainability:

- Favourable edaphic and climatic conditions encourage growers to tap added economic returns.
- Traditionally gardening is a favourite activity and fully adopted in the society.
- Market is well established for fruit and processed materials and returns are optimum.
- Tenure of the produce is clear.
- Technical support system is fully established and accessible.
- Macro environment is supportive as government encourages fruit culture.

8.7 Future expansion scope:

Keeping in view the climate and existing trend of fruit growing and market situation scope is there to promote the activity. However market survey for demand and supply is essential before making intensive cropping to avoid market slump, which discourages small growers. The following factors however hinder large-scale investment in hilly areas.

- Absence of security of tenure to the tenant.
- High establishment cost.
- Long lead-time of production
- Small land holdings.
- Poor root network.

8.8 Geographic spread:

It can be extended to almost every area where water is available and climate is suitable to culture specific fruit species.

8.9 Strategy of Expansion:

- Improving post harvest technologies to improve picking, grading, packing, preservation and storage.
- Facilitation for establishment of cold storages.
- Improving farm to market network to enable cheap and quick transportation.
- Developing system of collective transportation and marketing.
- Improving access to market information.
- Linking farmers with research network to access new technology/species.
- Promote value addition.

8.10 Linkages with SPCS:

- Governance and capacity development
- Poverty alleviation.
- Sustainable industrial development.
- Sustainable Natural Resource Management and biodiversity conservation.

9. Farming systems:

9.1 Introduction:

About 70% of population of Pakistan either directly or indirectly is involved in farming. This sector employs some 53% of labour force and accounts for 30% of gross domestic products and 35% of foreign exchange earnings. Improvement in farming systems has thus been pursued by almost all the projects studied, but focus of program differs considerably from place to place and project to project. The following activities have become more stable.

Increasing Intensity of cropping—In most of the areas where single crops were grown now double cropping has been practiced.

Rotational cropping-- In areas where alternate crop of almost same economical value has been identified rotation of crop started.

Organic farming—in some areas use of green manure and in a few, farmyard manure has been picked up.

Improved varieties of cereal crops- although seed multiplication in private sector could not get adopted, however, demand for improved seed is consistently increasing.

9.2 Evolution:

Traditionally due to poverty, seclusion, poor infrastructure, lack of access to technology and excessive fragmentation of already scarce arable land primitive agriculture was practiced in northern valleys. Due vagaries of weather in most of the areas single crop was cultivated. Local varieties were low yielding and due to continuous cropping of same species yields as well as quality of output were significantly diminishing. Agricultural and animal refuse were used as fuel. Consequently agricultural output was decreasing, which in many areas was offset by importing forest soil. As such to introduce regenerative agriculture these projects ventured to improve existing defective farming systems. The success and impact is more remarkable in the following four components;

- Introduction of double cropping system instead of traditional mono cropping at higher elevations.
- Introduction of alteration of crops to restore fertility.
- Encouraging use of green manures and farmyard manures to restore organic matter to the fields.
- Use of improved varieties of cereal crops.

9.3 Objectives:

- To improve farm income by increasing per unit output through increasing intensity of cropping and conserving soil fertility;
- To arrest soil erosion by minimizing the period, when field is left fallow;
- To restore organic matter to the soil; and
- To reduce susceptibility of crop to pests and diseases by using resistant varieties.

9.4 Description of activity:

At high altitude due to short growing period only one crop was practiced. In majority of areas only maize was cultivated, while in others potatoes were also grown. These projects, by introducing early and late growing varieties, crops of lesser gestations and improvements in technology have successfully demonstrated that majority of areas over here can grow double crops. Consequently in DKP now double cropping has been adopted, except Kalkot, Thall and Lamutai, which are at much higher elevation.

To avoid persistent cropping of potato, project ventured to discover crops, which could be alternated, but failed to do so as none of the crop ensured comparable returns in such a short span. Finally off-season vegetables were introduced. Since these provided three to four times more returns than the seasonal vegetables, so were accepted and are being practiced.

To restore fertility in most of these areas forest soil was imported, which was dangerous for sustainability of forest crops. Chemical fertilizers are used, whereas animal refuse is used as fuel. These projects promoted green manures like clover, trifolium and composting and proper decomposition of farmyard manures.

Traditionally research is focused on plains and irrigated agriculture. These projects endeavoured to identify and introduce improved seed, did adaptive research and provided platform for research organizations to conduct research on cereal production for mountainous agriculture.

9.5 Existing scenario:

Where ever possible double cropping has been readily adopted. Alternation of crops is only practiced where alternate crop is of equal or more economic value. Organic farming is picking up gradually. Improved seed and cropping practices with respect to cereals have been assimilated in the local system.

9.6 Reasons of the sustainability:

- In hilly areas land holdings are small. Cereal crops are grown for local food/fodder security. Any effort geared to increase output and quality of output being needed is readily accepted.
- The increase in output increases income and satisfies subsistence need. As such interest level is more.
- All these initiatives are tuned towards ensured and higher returns therefore, are easily adopted.
- Technology is simple and accessible.
- No risk is involved in adopting improved technology.
- Market is fully established and farmers have access to information.
- Supportive macro environment.
- Reduced gestation favours double cropping.
- Participatory research enhances confidence of growers over technology.
- The initiative being cheap is affordable.
- The conspicuousness of results incite others to adopt promising technology.

9.7 Future expansion scope:

To translate new findings into action farming is gradually being improved. With improvement in farming there is significant possibility to increase productivity, hence scope is great.

9.8 Geographic spread:

Since cereal crops are grown through out the study area, hence improvement in farming system can be extended to all needy areas, particularly Kalam, Gallies, Kaghan, Northern Areas and parts of AJK.

In areas where traditionally Môn cropping is practiced in northern Pakistan, double cropping can be introduced through encouraging late and early varieties and by adding new potential crops through research and extension

Crop rotation can be introduced, subject to the condition that both crops are of almost same economic value through out-the study area.

Farm yard manure and organic fertilization is part of local culture so can be extended all through.

9.9 Strategy of expansion:

- Research may be conducted and farmers may be provided information about early and late varieties of almost all crops.
- Suitable alternate crops of equal economic value may be developed to avoid monocultures.
- Marketing information may be made available with respect to demand, location, and quality to avoid market failures, especially through farm service centres.
- Collective collection, processing, transportation and marketing may be encouraged to benefit growers.
- Certification efforts may be strengthened to ensure quality of agricultural outputs.
- Farmer networks may be encouraged.
- Availability of quality seed for genetic purity may be ensured.
- Persistent technical support may be made available to farmers at their doorsteps.
- Further export possibilities to agricultural outputs may be explored.
- Value addition may be encouraged instead of unprocessed disposal of agricultural outputs.
- Organic farming may be encouraged.
- Demonstrations are necessary to encourage diffusion of innovations.

9.10 Linkages with SPCS:

- Capacity building

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- Poverty alleviation.
 - Natural resource management.
 - Biological diversity.

10. Livestock extension workers:

10.1 Introduction:

Livestock rearing is a very important activity in the rural economy. However, in majority of remote and inaccessible areas, farmers sustain considerable losses annually owing to mortality and contagious diseases caused due to inadequate awareness and lack of veterinary health coverage. Appreciating this problem, these projects ventured to develop a cadre of paraprofessionals at village level and groomed them to such an extent that they could sell their services sustainably. Livestock Extension Workers provide services to contain epidemics, treat common diseases and minor injuries very efficiently, resultantly animal losses visibly reduce. Almost all the studies have endeavoured to train LEW. Wherever, properly practiced it resulted in creation of acceptance of project by the concerned community. LEWs training provided link with private sector, widened scope of local job opportunities and gradually devolved responsibilities from projects to communities.

10.2 Evolution:

The communities in remote and inaccessible mountainous areas were sustaining tremendous losses due to diseases and animal mortality annually. The projects in order to minimize these losses initially, made efforts to attract professionals from outside through offering incentives, but this practice could not ensure sustainable provision of veterinary health services on winding up of the projects. Thus the concept of developing local paraprofessionals was developed by the projects, which was of-course evolved under the influence of the concept of bare-footed professionals developed in China. Since the results were highly encouraging so the concept was readily picked up and replicated by other projects. With the passage of time, the weaknesses were addressed and system gradually further improved. This program has now been extended to the following sectors:

- Agriculture MT / EW
- Livestock MT / EW
- Forestry MT / EW
- Fruit processing MT / EW
- Entrepreneur & Marketing MT / EW.

10.3 Objectives:

- To reduce economic losses (caused by livestock mortality and diseases) sustained by the farmers by providing them veterinary health facilities at their doorstep;
- To provide services to the communities to deal with minor injuries, tackle delivery cases and treat common diseases;
- To increase livestock productivity by controlling diseases and improving livestock hygiene;
- To establish a link with private sector, widen the scope of self-employment and to gradually devolve responsibilities from the Government to communities; and
- To establish sustainable livestock health system at local level.

10.4 Description of activity:

The communities are made aware of the concept and selection criteria and asked to identify suitable persons for the LEW training. The project staff, in consultation with local communities, filters the list to ensure that the deserving and willing persons are selected, who could adopt it as a full time or at least part time profession. Most of the projects have adopted the following criteria for this purpose:

The incumbent should have at least secondary education, and not expected to leave the village.

Should be already engaged with the activity.

Should be a permanent resident of the area.

Should be willing to contribute for the purchase of kit.

Could budget time in phases for the training.

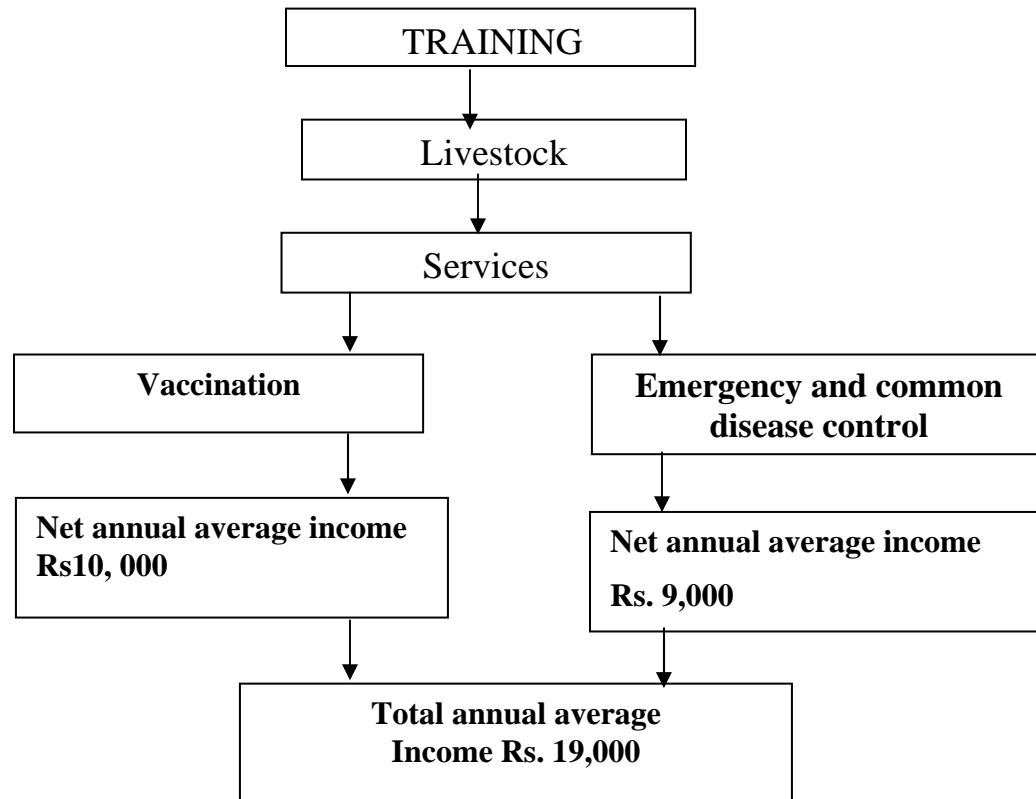
Thereafter nominees are sent for training to Animal Husbandry In-service Training Institute, where they are trained in phases for about two months. The projects provide them 50% subsidy for purchase of kit and link them with livestock specialists. Although the projects make them pay for the services they render for the project but they encourage them to develop into independent entrepreneurs gradually.

10.5 Existing scenario:

Livestock extension workers have been developed into self-sustaining entrepreneurs almost everywhere. They provide following services:

- Periodic vaccination of livestock and poultry.
- Castration of bulls, sheep and goats.
- Handling of minor surgeries and delivery cases.
- Treatment of common diseases.
- Advice on feed and animal hygiene.

A survey of income of LEW was made by AKRSP in Chitral. It showed that almost all of the LEWs have developed into entrepreneurs. The assessment made by AKRSP in respect of earning of Mr. Muhammad Yusaf, LEW is produced as below:



10.6 Reasons of sustainability:

- Due to lack of alternate veterinary health facilities LEWs are direly needed in remote and inaccessible rural areas to contain livestock mortality.
- The LEW is an established entrepreneur in areas where infrastructure and veterinary health facilities are inadequate.
- Economic returns are promising.
- Skill is developed to an extent where they can deal with emergency and common diseases.
- Job is risk free and investment is affordable.
- Returns start accruing immediately on completion of training and are persistent.
- Support mechanism is well established and easily accessible.

10.7 Future expansion scope:

Pakistan is an agrarian country. Life is agro-silvo-pastoral in Northern Pakistan. The communities draw on cash and animal products for livelihood from rearing livestock. As such LEWs program, which provides paraprofessionals to extend health cover to rural areas, has a

fair chance of expansion, given the fact that it provides visible improvement in animal health, reduces mortality, and ensures handsome income to the LEW. Thus scope of expansion in remote and inaccessible areas is tremendous.

10.8 Geographic spread:

Due to poor infrastructure, and non-availability of govt-sponsored facilities at easily accessible distance, there is ample possibility to extend LEW coverage to almost all remote and inaccessible areas in Northern Pakistan.

10.9 Strategy of Expansion:

- Sound selection criteria may be adopted & adhered, to ensure the presence of LEW in the area as an entrepreneur with due regard to gender participation.
- LEW may be linked to the veterinary health system.
- Input availability in private sector may be encouraged.
- Such subsidies may not be given, which discourage operation of LEWs as private entrepreneurs.

10.10 Linkages with SPCS:

- Governance and capacity building.
- Poverty alleviation.
- Natural resource management.
- Biological diversity.

11. Preventive measures:

11.1 Introduction:

Livestock rearing, being the most important source of earning next to agriculture in the tract plays a major role in the economy of farmers and nomads. Normally due to illiteracy, unhygienic conditions, malnutrition and lack of prophylactic cover livestock becomes susceptible to frequent epidemics and worms. Resultantly considerable numbers of animals either die or become weak and the owners sustain tremendous losses. Thus invariably all the projects studied encouraged extension of cover and strengthening of preventive measures to minimize livestock losses.

11.2 Evolution:

Life is agro-silvo-pastoral in northern Pakistan. Over here livestock is an important asset and one of the biggest sources of income. Due to illiteracy, unhygienic conditions and non-availability or lack of access to veterinary health facilities, colossal losses were caused to livestock owners annually by the following major contagious diseases:

SNo	Type of livestock	Name of Disease	Period
	Cattle		
1		Foot and mouth disease	February and September
2		Black quarter disease	April, August, September
3	Haemorrhagic	Septicaemia	June and December
4		Rinder-pest	October
	Sheep/Goats		
1		Enterotoxaemia	January and July
2		Anthrox	February and August

The projects initially ventured to vaccinate the livestock at their own, the results were very promising and almost 95% mortality caused by these epidemics was controlled. The 5% mortality was also observed in such places where vaccination was not done. This reduced livestock losses to such an extent that gradually communities, without asking for the project support started vaccinating their animals through LEWs. This activity gradually got stable in the entire tract with out project-sponsored inputs.

11.3 Objectives:

- To minimize economic losses sustained by farmers due to livestock mortality caused by epidemics.
- To educate farmers about usefulness of preventive measures and encourage them to get their animals vaccinated annually;
- To encourage use of balanced diet (Food supplement), hygiene and prophylactic measures to increase resistance of livestock against common contagious diseases; and
- To deworm animals to improve their health and increase production.

11.4 Description of activity:

The activity was initiated with 100% subsidy. The LEWs were trained and provided medicines etc to vaccinate animals. A large-scale advertisement was carried out and camps were established in all major habitations. Thereafter, teams were located at the opening of valleys to vaccinate all local animals and those coming into valleys. The conspicuousness of results tempted people to replicate it and it has been adopted. Presence of LEWs has ensured 100% coverage.

11.5 Existing scenario:

As already mentioned, being need based, effective, economically viable and easily buyable, this activity has been fully adopted by the farmers and completely privatized. Both sedentary and migratory animals are getting regularly vaccinated.

11.6 Reasons of sustainability:

- The activity is need based.
- It helps in improvement and protection of livestock, which are exclusively owned by the farmers themselves. The decrease in mortality provides them immediate economic incentive to treat their livestock well in time.
- The technology and inputs are locally available in the shape of LEW at low cost and in emergency.
- Institutional infrastructure for treatment becomes available, which people draw to control contagious diseases, treat minor injuries and common diseases perpetually.

11.7 Future expansion scope:

Given that the life is agro-silvi pastoral and livestock is the most important source of livelihood in rural areas, in order to minimize losses caused by mortality and to ensure better income, preventive and prophylactic measures have been well received. Keeping livestock number, productivity and extent of losses in view, scope of expansion is tremendous.

11.8 Geographic spread:

As the contagious diseases are observed everywhere, likewise prophylactic treatment is also required everywhere.

11.9 Strategy of expansion:

- Survey of all epidemic diseases needs to be done and calendar of their occurrence needs to be developed.
- Increased awareness of common diseases and extent to which these can be treated.
- Once subsidized vaccination to demonstrate effectiveness of preventive measures levels public opinion immediately.
- Local institutional capacity may be created in the shape of LEW.

-
- Technical support may be continuously provided to LEW and he may be linked to nearest Livestock specialist.
 - LEW provide best breakthrough mechanism, being sensitized and local.

11.10 Linkages with SPCS:

- Capacity development.
- Urban environment.
- Natural resource management.
- Poverty alleviation.

12. Entrepreneur Development:

12.1 Introduction:

The inhabitants of Northern Pakistan are extremely poor and heavily draw on natural resources for livelihoods. Population pressure is immense, so use has exceeded the regenerative capacity. As such already dilapidated resources cannot support such pressures indefinitely. Therefore, keeping acute poverty and awful environmental degradation in view, the support organizations, besides, improving management of natural resources are also exploring the ways and means to expand livelihood opportunities for rural poor. In this quest, through building capacity; mobilizing local resources; and providing financial support and market information, small entrepreneurs are being developed to generate source of either additional income or the sole source of income. The enterprise development is defined by these projects as under:

“Enterprise can refer to all types of income generating activities, no matter how home based, seasonal or part time or on any large scale, usually non – seasonal activities which have greater commitment of time and resources” (AKRSP).

“An enterprise is a small business producing goods or earning cash. It generally needs a limited capital, has one or very limited employees / workers, is often home based and has a weak market Power”(SRSP).

12.2 Evolution:

With the advent of human life on this planet, when life was simple, population was less and natural resources abundant, the entire livelihoods demand were met solely from natural resources directly. Gradually with the increase in population and march of civilization, human beings felt the need to develop implements to culture crops and articles to store his basic needs. This tempted him to master skills of developing such implements and articles of daily use. Initially the members of the household itself fulfilled requirements of each household, but subsequently concept of specialization emerged to meet the market demand and earn livelihood. This gave birth initially to the development of entrepreneurs and later to cottage industry. The people started small-scale production of articles of daily use like making of threads, weaving, domesticating of animals etc. These small-scale businesses, with the passage of time, developed into big factories and production units and flourished businesses, where opportunities were available. But due to lack of opportunities and market availability, the entrepreneurs could not compete with mechanized industry so local skills eroded. The industry could not absorb the growing labour force resultantly the dependence shifted to natural resources, which caused depletion of resources and increase in poverty. To harness the avenues of off-farm income opportunities, the projects/organizations resurrected the idea of local small-scale entrepreneur development. The projects ventured for capital generation through local savings, which were then used for internal lending or as co-lateral to attract small-scale loans for entrepreneur development.

12.3 Objectives:

- To generate off-farm livelihood opportunities to alleviate disproportionate pressure on natural resources.

- To optimally mobilize local capital, traditional skills, and resources. Capitalize on local opportunities to enhance off-farm income for poverty alleviation..
- To add values to local raw material/traditional skills.
- To broaden the economic base and lessen the dependency for income on natural resources.

12.4 Description of activity:

Enterprise development is an important activity, which can help in broadening of economic base, alleviating poverty and easing out pressure on the natural resources. This activity is thus an integral part of interventions package offered by the projects studied. The entrepreneurs are identified after proper assessment of the situation to provide viable and sustainable sources of income at that locality. Normally local traditional activities that have the potential to develop into entrepreneurs are identified and the potential offered by local resources (human resource, natural resources, skill level and working capital) as well as market situation is observed. The economic viability of each possible entrepreneur is worked out and the ones having better prospects are offered to the communities. The survey of entrepreneurs offered and promoted by the projects studied reveals that these can be broadly categorized into following four types:

- a) Imparting market based professional skills to enable the incumbent either to sell services or organize self-employment. (Tailoring, Plumbing, Electrician, auto-mechanic, carpenter, embroidery, LEW and TBA etc.)
- b) Support to develop local business like small shops, dairy farming, agri-inputs and poultry and cottage industries like weaving, rice husking etc
- c) Processing NTFPs and their value addition like weaving ropes, making baskets, brooms and mats.
- d) Raising high value crops like off season vegetables, orchards, honey, mushrooms etc

12.5 Existing scenario:

The enterprises developed by the projects studied are tabulated below. The table also reveals their relative status of stability as entrepreneur as well. It has been observed that regularly potential of developing diversified entrepreneurs may be explored through market survey; to avoid over crowding and negative competition that destabilizes even the stable entrepreneurs.

Activities	Sustainable	Have potential	No scope
Non NRM			
	Skill development	Agricultural inputs agri-based business	
	Tailoring	Rice husking	
	Plumbing	Small business cottage industry.	
	Electrician		
	Saving/credit		
NRM based			
	Off-season vegetables	Vegetable nursery	Poultry development

	Fruit Nursery	Bee keeping	Fruit processing and preservation
	Seed collection	NTFP based entrepreneurs	Create seed multiplication
	Handicrafts	Sericulture	Kitchen gardening
	Orchards		Water ponds
	LEW		Wildlife farming
	Fish farming		Mushrooms
	Mazri products		
Women income generation activities			
	Tailoring	Poultry	
	Embroidery	Nurseries	Fruit processing / preservation
	Mazri products	Kitchen gardening	
	Handicrafts	Saving/credit	
	TBA		

The sustainable enterprises pursued by these projects, which have not been discussed separately as sustainable initiatives in the report are discussed below.

Skill development

Market based skills are imparted to unemployed/under-employed persons to enable them to fetch bread either by selling their services or products or through self-employment. In the latter case, not only the person him or herself gets employed but in majority of cases may provide jobs to others as well. The common skills that were imparted by these projects are tailoring, plumbing, electrician, auto-mechanic, carpenter, embroidery, LEW and TBA etc. These are market based and fully stable and provide reasonable earning for living.

Saving and credit

Working capital is essential for rural development. Thus to generate working capital for internal lending and as collateral to attract external funding, saving is promoted by almost all rural development projects using RSPs approach. Saving was initiated by AKRSP. A sum of Rs.424 million were saved through 3,900 VOs till 2001.

To cope with requirements of farmers for capital, system of internal lending within the VO has been developed. AKRSP in 1983 started lending out of its own sources as well as through a credit line obtained from banks. AKRSP till 2001 loaned out a total amount of Rs.1,568 million and loan defaults were less than 1%.

Saving and credit is an established and sustainable activity in almost all the projects studied.

Mazri

Mazri is a special dwarf palm, which grows in sub-tropical zone in Kurram, North Waziristan and Orakzai agencies and Kohat, Hangu, Karak and DIKhan districts in NWFP. Mazri leaves are used to make variety of products including mats, baskets, brooms, hand fans, trays, grain bins, ropes and ban and decoration pieces. Women

mostly manufacture the mazri products. Market for Mazri products is well established. It is an established entrepreneur in Mazri growing areas.

Handicrafts

Traditionally each area has its own specialized handicrafts in Northern Pakistan. In Chitral patti and its products, furniture of walnut and mulberry and musical instruments while in Dir caps, carvings in furniture, knives and pottery are important handicrafts. These projects endeavoured to provide capital and technical and market support to develop these activities as small and medium enterprises.

Agriculture inputs

The projects have attempted to link local entrepreneurs with agricultural input supply and marketing systems down below. Due to agricultural innovations and improvement in socio-economic conditions demand for agri-inputs like seeds, fertilizers and pesticides are increasing. As such local businesses are establishing.

Kitchen gardening

The concept of small kitchen gardens, especially to produce vegetables and fruits for local consumption and marketing has got roots in areas served by these projects. Kitchen gardens are mostly encouraged as gender based activity to improve nourishment and to enable women to fetch some cash.

Rice husking:

It is a seasonal enterprise and is dependant on the quantity of rice production, which in turn is linked to the availability of irrigation facilities and land. If both land and irrigation is available to produce rice in abundant quantity, certainly the activity will remain operative and shall sustain.

Fish farming

Fish is a favourite food, source of meat and provides water sport. Various ecological zones support specific type of fish. This activity has immense market potential as the areas covered by these projects have the potential to culture trout and other cold and semi cold-water varieties. Water, in upper reaches of mountains, comes from snow melting. This cold-water provides a congenial environment for trout culture. Recently Trout Farming has been established in private sector in Kalam / Bahrain, Madyan (Swat) & Kaghan valley. Due to delicacy, it fetches high price. Trout is also a favourite game fish. In areas, where water-temperature goes up like lower part of Swat, Mashher breeds well. These days' china carp is also widely being cultured in private ponds in southern parts of NWFP.

Mushrooms (Oyster)

In hilly areas a variety of mushrooms are found in nature. Majority of edible ones are used by collectors themselves, whereas the costly mushroom like "Guchi" is marketed for cash. Guchi is used as table delicacy in big hotels or exported. Mushrooms have limited market in such areas but are likely to get roots as the area is tourist's resort and many good hotels have emerged in northern parts of the country,

which is linked with market in plains through all weather good road links. The activity has the potential to sustain and grow.

Sericulture:

The tract has sizeable mulberry trees and favourable climate to rear silk worms. Thus silk rearing can be introduced especially as income generating activity for women at household level.

Poultry:

It has been initiated at a very low level such as 8, 15, 20, 150 birds. Such low scale enterprise cannot become an economic enterprise. Rather it is very risky because of susceptibility of chicks to diseases and high inputs during inclement weather conditions. On small scale it does not have any sustainability. But if it is introduced as a small / medium size business concern through cluster of VOs with clear partnership and investment terms, it has a potential to sustain being very lucrative business.

Apiculture:

The study area is part of Himalayan-hindukush and karakurram mountain ranges and rich in bee flora. The project has introduced bee-keeping activity in some pockets. This activity has been initiated on *Api-male ferra* an exotic bee as migratory bee-keeping activity. While none of the project studied so far has ventured in scientific management of local bee i.e. *Api cerena*. Traditional management does exist in most of the mountain villages. The activity both traditionally and scientific management of bees is already stable. As far as migratory bee keeping is concerned its management on scientific basis has already begun and gained roots.

Traditional management of Himalayan bee is a sustainable activity needed to be grafted on scientific management for enhanced and better production and return.

Seed multiplication:

To increase the production use to quality seed was introduced in almost all projects. Besides linkage development, the project through proper training introduced the production of good quality seeds of main crops like maize, wheat and potato. The enterprise, because of multiple factor could not continue as for as wheat and maize seed production was concerned. Potato seed production at low profile is still being done. The government and some other organizations are competing in the activity and the farmers, devoid of resources and technical know how, cannot compete. The activity is thus not sustained but has the potential.

TBA

In order to upgrade skills of traditional birth attendants in villages to enable them to provide better and more hygienic services for mother and childcare, TBA trainings are imparted in these remote areas. It has been very nicely received and many traditional trained midwives are now serving local communities and have grown into strong entrepreneurs in the tract.

12.6 Reasons of sustainability:

- Need based
- Market linkages
- Financial and technical support
- Availability of raw material
- Traditional
- Local opportunities.

12.7 Future expansion scope:

The expansion of enterprise development is bright because it is more profitable and also generates employment. The enterprise is technically simple and mostly need based.

12.8 Geographic spread:

The entrepreneur development can be successfully extended all through the Northern Pakistan. However, for each area, area specific entrepreneurs need to be identified and their relative economic viability needs to be worked out before they are extended to communities.

12.9 Strategy of expansion:

- Macro environment should be made supportive
- Persistent technical support
- Availability of financial support
- Sustainable supply of raw material
- Market information and market linkages
- Road network
- Research to orient the products according to the market demand

12.9.1 Linkages with SPCS:

- Combating poverty
- Integrating environment and development
- Supporting indigenous and traditional practices
- Sustainable industrial development
- Education, public awareness and training
- Improving NRM.

13.Improvement and development of water channels

13.1 Introduction:

Water is most important of all the natural resources, as it is vital for human survival, food production and economic development. Therefore, interaction between human race and water is as old as the history of life on earth. This is proved by the fact that the first civilizations arose in the river basins of the Nile, Tigris, Euphrates and the Indus.

Initially springs, streams, rivers & lakes were the main source of drinking water, but gradually man learnt ways and means of tapping ground water as well.

13.1 Evolution:

Initially food was directly drawn from nature; gradually man learnt to culture agricultural crops. Although, the crops could be initially grown through rainfall in climatically suitable areas, but gradually due to over populations and for growing crops outside natural zone and season, use of irrigation became inevitable.

The Holly Quran declares water as the main constituent of life and describes that besides using water from natural sources of rainfall, springs, streams and rivers, the man started developing wells, and water channels to sustain life from the time immemorial.

- **Part XVII- Sura-21, Ayat 30 “and we made every living thing of water”.**
- **“ Reference of Rainfall and springs is very common as sources of water. Hills have been regarded as a main source of water storage and downstream drainage”**
- **“Reference of water channels in the time of Faroha is also there.”**

The development of water channels for irrigation is traditional practice and firmly embedded in local culture, ethos and mores. Consequently a requisite institutional mechanism to develop, maintain, operate and repair water channels emerged. As such the system of irrigation, water distribution and collective operation is considerably old.

Resultantly, similar traditional system also emerged in the Northern Pakistan and has been operating successfully. The existing system of Karez (Boluchistan), Rodkohi irrigation system (D.I.Khan) and traditionally operated channels in tribal areas, Chitral, NA and Kohistan, clearly reveal that local irrigation system is still intact in these areas. But with the advent of state efforts for extending irrigations system to new areas for food security, these practices in some areas withered, while in the rest of the areas it got weakened.

13.2 Objectives:

- To bring new and additional land under irrigation to extend agriculture, improve returns and enhance income from arable lands.
- To increase and improve efficiency of existing canals by decreasing water losses.
- To increase intensity of cropping and diversify cropping pattern to attain self-sufficiency and subsidized incomes.
- To increase cultivable area in arid and semiarid zones

13.3 Description of activity:

The irrigation channels are improved or developed as part of productive village infrastructure schemes. In all cases the community identifies improvement or construction of water channel as commonly perceived priority project and assures to contribute part of cost in cash or kind. The project develops detailed design, assesses quantity of work and develops cost estimate. Thereafter detailed ToPs are chalked out and signed, this binds community for partnership. The communities themselves, with the support from the projects develop the schemes. The communities undertake responsibility to maintain and operate it communally and develop mechanisms to do so and ensure equitable use. As such these activities seems stable as long as the organizations raise remains intact, stream of benefits keeps accruing and the communities have collective spirit, capital and need to operate it.

13.4 Existing scenario:

Currently, besides maintaining and operating existing communal water channels (whenever feasible and investment opportunities are available,) communities engage themselves in development of new water channels.

Apart from gravity water channels, many siphon and PVC pipe driven community irrigation schemes have also been developed in Northern Pakistan, especially through the support of AKRSP.

13.5 Reasons of sustainability:

- It is fully need based in areas, where land is scarce and fragmented. Irrigation over here not only ensures increase in production from the existing arable lands, but also provides opportunity to bring new areas under agriculture through irrigation.
- It enhances the income over a short run and operates over a long run.
- A local system of shares in obligations and distribution of benefits is practiced and respected.
- Local institutional infrastructure exists to operate these water channels.
- Technology is simple and well adopted.
- The use rights over water so generated are fully established and respected by the community, while operating the system.
- It is free of risks.

13.6 Future expansion scope:

In the face of growing poverty and ever increasing population, local food security and cashable surplus is priority number one. Since irrigation not only ensures increase in production from existing agricultural land but also provides possibility of bringing new areas under cultivation, there exist tremendous scope for its expansion all through the areas where irrigation is required and perennial source for irrigation is available.

13.7 Geographic spread:

In Chitral, NA, Dir Kohistan, Kalam and other hilly areas, a very good indigenous system of organizational arrangements, maintenance and water distribution exists for operation of

traditional channels. This can be extended intact while creating new channels in areas where water and land are available for irrigation purposes through suitable approach.

13.8 Strategy of expansion:

- Indigenous system may be respected, encouraged and promoted.
- Capital & technical support may be made available.
- A system of proportional contribution in relation to size of benefits likely to accrue to each participant may be encouraged.
- A system of water distribution and operation may be devised.

13.9 Linkages with SPCS

- Good governance and capacity building
- Poverty alleviation
- Natural resource management

14. Productive village infrastructures (PVI)

14.1 Introduction:

It is a well-known fact that the communities generally do not perceive persistent erosion of natural resources as a significant threat, unless they have been compelled to do so by the circumstances in the wake of acute shortage of timber and firewood or confronted with environmental catastrophes. Resultantly, despite gigantic efforts by the donors and the states, desired results could not be achieved, because communities have neither properly owned these activities nor materially contributed to such initiatives. As such to favourably level mass opinion, attract popular interest and enlist local support to sustain such efforts for rehabilitation of deteriorating environment, mass participation is inevitable. Consequently, in order to sensitize and organize communities, offering of need based entry activities commenced to invoke concept of self-help and productive trade-off. Once the communities get organized through need based activities, gradually they are encouraged and capacitated to undertake management of local Natural Resources to render RNRs as a sustainable source of livelihoods. These entry activities designed around basic needs, especially of infrastructure for the communities are called Productive Village Infrastructures.

14.2 Evolution:

In remote and inaccessible Northern parts of the country, rural infrastructure is inadequate. Thus to organize people into self-managing units, construction of need based infrastructure being top most need has been used as a major tool to incite interest of masses for organization. Consequently the concept of PVI emerged as a means to organize local communities against felt needs.

14.3 Objectives:

- To satisfy basic local needs for improvement of infrastructure to attract interest and stimulate process of organizing communities.
- To ensure speedy socio-economic uplift of the area by ensuring provision of basic needs.
- To ensure provision of basic facilities.
- To inculcate concept of self help and self management in communities
- To incite communities for productive partnership.

14.4 Description of activity:

Productive village infrastructure is used as an entry point activity to attract genuine interest of local communities to organize themselves into self-managing organizations and pool the local resources to optimally utilize them for speedy economic development. The PVI are used as a leverage to facilitate, develop and strengthen community organizations. Communities identify their felt needs for the community-based infrastructure. Project develops feasibility, asses cost, discuss and develop consensus of the communities on shares and develop and sign ToPs. Normally projects contribute up to 70% of cost and the communities contribute the rest either in cash or in kind. The communities plan, implement and maintain the PVI themselves.

14.5 Existing scenario:

The concept of PVIs in rural development and participatory natural resource management has been fully accepted and adopted by almost all projects. The common PVIs so far executed are enlisted below:-

- Land development
- Irrigation
- Drinking water supply
- Flood protection
- Soil conservation
- Wind mills
- Micro- hydel Projects
- Bio-gas
- Roads, paths and bridges
- Sanitation
- Street pavements
- Water ponds
- Waiting cabins
- School boundary walls
- Ambulances

Being based on dire need of the community, normally the PVIs are well managed and properly maintained, unless they have been offered by abridging the process to quickly shop social organizations. Although the PVIs are generally well maintained, but the following PVIs have specifically shown greater rate of replication as well and have become highly sustainable. Consequently, communities have started investing into them even with out external support.

- Micro-hydel projects
- Drinking water supply
- Land development for agriculture
- Irrigation
- Sanitation

Hydel projects:

In the Northern tract due to physiographic advantage at many places, opportunities exist to develop small hydel power projects at minimum cost. Thus communities have started exploiting this potential wherever feasible, as the technology is simple, tuned to local expertise and are cheap. People have started pooling their resources collectively or individually to develop hydel power stations to satisfy their requirements and to fetch cash to properly operate and maintain it. It is currently being successfully replicated in Chital, Kalam, Dir Kohistan, Swat, Kohistan, Allai, and Kaghan. The activity has already obtained firm roots.

Drinking water supply:

Water is essential for human life as well as for livestock. Thus drinking water schemes fall at the highest priority at communal level. Drinking water is generally made available through dug wells, PVCs and gravity channels. It is a fairly stable activity.

Land development:

In mountainous areas agricultural land is scarce and extremely fragmented. To increase production and improve income, land development and bringing new areas under irrigation being remunerative are highly desirable activities. Therefore, it is well adopted and is being practiced and replicated even without external support.

Sanitation;

Sanitation is an increasingly felt need and communities have demonstrated enough interest by investing into it.

14.6 Reasons of sustainability:

These activities are identified by the communities as a common felt need and carried out to incite interest of communities for undertaking other development pursuits through organizing local self managing groups. These are normally very stable and get adopted easily, except, where the process has been bypassed or PVIs have been sold to shop organizations by abridging the process. The salient reasons of sustainability are:

- These address basic needs of the community;
- Existence of a system of proportionate contribution and distribution of benefits likely to accrue;
- Skill is simple, adaptable to local capacity and affordable; and
- It is free of risks.

14.7 Future expansion scope:

In Northern Pakistan the infrastructure is poor and inadequate. Thus PVIs have tremendous scope of expansion.

14.8 Geographic spread:

PVIs are needed everywhere, and are offered only whenever people agree to organize themselves into self-managing groups. The PVIs can be extended all through the tract.

14.9 Strategy of expansion:

- It should be decided through a process and should be planned & executed entirely by communities.
- It should not be offered to shop social organization, but on need basis and after some time to gauge genuine interest of communities for collectivism to strengthen the organization.
- It should invariably involve local investment and contribution to generate ownership.
- ToPs must be signed and followed up to ensure proper maintenance and clarify obligations

14.10 Linkages with SPCS

- Good governance and capacity building

-
- Poverty alleviation
 - Natural resource management

APPENDICES

Annex-I

TERM OF REFERENCE OF THE STUDY

Scope of the work:

1. Review the relevant literature/documents of the selected initiatives, i.e. Kalam Integrated Development Project (KIDP), Dir Kohistan Project (DKP), Agha Khan Rural Support Programme (AKRSP) Chitral, Sarhad Rural Support Programme (SRSP) Abbottabad, NWFP Forestry Sector Project, Malakand Dir Social Forestry Project, Nelaam valley Jehlum Valley Community Development Project AJK, Community Forestry in Northern Areas and SDC Farm Forestry Project.
2. Develop criteria of selection of replicable NRM related practices in consultation with Head Forestry Programme (HFP) and Coordination Agriculture IUCNP Sarhad Office Peshawar.
3. Select the best practices in accordance with the criteria and in consultation with the above IUCNP staff.
4. Verify performance of the identified best practice in the field.
5. Consult the communities and document their opinion and experiences with regard to the suitability of the practices.
6. Finalize the list of best practices.
7. Document in detail, replicable practices in a manner that it makes their replication practicable and convenient, particularly from the point of view of users, as agreed by IUCNP staff mentioned above
8. Recommend geographical areas within Northern Pakistan for replication of identified practices.
9. Advise on the approaches/methodologies to be adopted for the dissemination of those practices among the target group.
10. Expected output
 - Report containing
 - i. List of best practices
 - ii. Basis of selection
 - iii. Description of best practices along with necessary technical details
 - iv. Approaches to be allowed for replication
 - v. Geographical areas suitable for replication

METHODOLOGY

MAJOR STEPS INVOLVED IN STUDY

- Developing clarity through consultations with IUCN staff.
- Collection of literature
- Review of literature
 - o Project design, objectives
 - o Working methodology
 - o Detail of NRM practices
 - o Process pursued
 - o M&E reports
 - o Effect and impact studies

- Developing of list of NRM practices
 - o Practices foreseen.
 - o Practices actually initiated.
 - o Practices – pilot tested and promoted.
 - o Practices – validated /considered effective
- Preliminary short-listing of NRM practices considered effective on pilot scale.
- Development of criteria for identifying best NRM practices.
 - o Criteria
 - o Indicators
- Filtering the list through criteria to develop a list of practices to be probed further.
- Development of survey designs and schedules to verify practices in the field of identification.
 - o Post project sustainability
 - o Adaptation- as such or with adjustments
 - o Spin-off
 - o Determination of actual effect and impact
 - o Implementation procedure
 - o Technical, Institution, Social and Economic suitability
 - o Reasons for sustainability.
 - o Scope of up scaling and expansion.
- Carrying out a survey as per procedure for ground truthing.
- Validation of the best practices.
- Documentation of replicable practices.
 - o Recommending geographic spread
 - o Developing extension/dissemination approach

ITINERARY OF VISITS

a) List of projects and villages visited during the study.

	Project	Village
1	NJVCDP,, Muzafarabad	Noshera (Garhi Dopatta) & Patikka
2	SRSP, Abbottabad	Mirpur and Basti lal khan
3	FSP, Peshawar, Chitral, Bunair, Mardan & Battagram	Bamborait (Shekhan Deh) Bunair (Batai) Swabi (Mir Ali) Batagram
4	AKRSP Chitral	Sum valley (Garam Chashma) Shoghor
5	DKP Dir at Shringal	Mangala Samang Shringal
6	KIDP, Kalam	Kalam Ushu Mao Dhand
7	SFPMD	Amlok Dara
8	PHP, Peshawar	Abbottabad
9	AKRSP Gilgit	Office + Processing unit at Ali Abad.
10	IUCN Gilgit.	Office.

b) List of project staff, professionals, resources persons and community representatives visited during study.

S. No.	Name of project	Persons/Key Informants
1	NJVCDP	<ol style="list-style-type: none"> 1. Dr. Manzoor ul Haq Awan CCF MD AKLAS AJK 2. Mr. Malik Mohd. Younas <p>CF Social Forestry Circle</p> <ol style="list-style-type: none"> 3. Ch. Bashir Ahmad DFO 4. Kh. Shafqat DFO Planning 5. Raja Mohammad Younis <p>DFO Direction CCF Office</p> <ol style="list-style-type: none"> 6. Nazir Awan DFO, Afforestation 7. Hafiz Walayat Hussain, DFO 8. Abdul Rauf DFO Range Management 9. Abdul Hameed RFO 10. Raja Zaheed-Din 11. Raja Muzaffar, Chairman VDC 12. Ghazala Secretary WO Pattika 13. Shafiq 14. Local farmers and representations of VOs.
2	SRSP	<ol style="list-style-type: none"> 1. Mohammad Zahir Shah Agriculture Officer 2. Captain (Retired) Abdul Aziz Abassi SPMER

		<ol style="list-style-type: none"> 3. Mohammad Alam RE 4. Riaz Secretary VDC Basti Lal Khan 5. Qurban Hussian Shah President VDC Basti Lal Khan
3	FSP	<ol style="list-style-type: none"> 1. Mohammad Hanif Khan, PD, FSP 2. Mohammad Arif, NRDO 3. Hero Heering, CTA 4. Jan Welliam Implementation Consultant 5. Shamsul Qamar, Sociologist 6. Shagufta Munir F. Sociologist 7. Sana Ullah Khan DFO Batgram 8. Ghaus ur Rehman DFO Chitral 9. Fazal-e- Khaliq RO Chital 10. Mehrab Hassan RO Drosh 11. Rustam Khan DFO Buner 12. Haji Mir Akber Shah RO Buner 13. Aqil Khan RO Rustam 14. Local members
4	AKRSP Chitral	<ol style="list-style-type: none"> 1. Afzal Ali Distt. Programme Forester Chitral 2. Khalid Hussain Agriculture Consultant 3. Anwar Bhatti Enterprise Development Specialist 4. Mehrab Hassan (Jaghor) 5. Shamas Yar Upper Chitral 6. Gul Wali Khan Las pur 7. Community members
5	DKP (Dir)	<p><u>VO Manala</u></p> <ol style="list-style-type: none"> 1. Mr. Gujar Khan 2. Mr. Arsala Khan 3. Mr. Siraj ud Din 4. Mr. Mirza Khan 5. Mr. Sher Afzal 6. Mr. Mohammad Naeem <p><u>VO Samang.</u></p> <ol style="list-style-type: none"> 7. Mr. Mian Badshah, President 8. Mr. Ahmad Sultan Member 9. Mr. Badshah Hazrat 10. Mr. Wali Ahmad (AEW/Member) 11. Technical staff 12. Mr. Nasarullah Khan PM 13. Mr. Wahid Gul SO 14. Mr. Wajullah RO 15. Mr. Parolloson CTA 16. Mr. Khalid ADF Agriculture officer 17. Mr. Mohammad Yousaf Khan, IUCN
6	KIDP, Kalam	<ol style="list-style-type: none"> 1. Dr. Shamshad Khtattak Consultant 2. Mr. Sanaullah Khan DFO Batgram 3. Mr. Hazrat Mir. RFO

		<ol style="list-style-type: none"> 4. Mr. Abdus Salam, RO Kalam 5. Mr. Mohamad Yousaf IUCN 6. Community members
7	SFPMD	<ol style="list-style-type: none"> 1. Dr. Hero Heering CTA FSP 2. Johan Nieuwenhuis Capacity Building Consultant 3. Shamsul Qamar SO 4. Abul Hassan SO 5. Shagufta Munir WID Consultant 6. Ehsan ul Haq, Ex PD SF 7. Inamullah IUCN 8. Zubair Qureshi Plan Pakistan 9. VDC
8	PHP	<ol style="list-style-type: none"> 1. Qazi Aqeequllah CTA PHP
9	FFP	<ol style="list-style-type: none"> 1. Dr. Faiz ul Bari CTA 2. Waqar Ahmad Jan Socialist
10	AKRSP	<ol style="list-style-type: none"> 1.Mrs. Susan Aziz NRM Specialist. 2.Mr. Ihsan Ali Valley Forester. 3 Mr. Sher Ghazi Project Manager.
11	IUCN Gilgit	<ol style="list-style-type: none"> 1.Mr.Hamid Marwat GIS Specialist. 2.Mr. Muhammad Fayaz Jughia P&D, NR 3.Mr.Ghulam Abbas Education and Private Sector
12	WWF Gilgit	<ol style="list-style-type: none"> 1.Mr. Ali Ahmad Jan Project Manager.
13	Khunjrab National Park Gilgit.	<ol style="list-style-type: none"> 1.Mr. Abdul Qayum Project Director.

Project profiles:

The projects, as per detail given in the ToR, were visited to collect literature, observe the situation, and consult the resource persons and local communities. A brief account of their profiles is given below:

Dir Kohistan project (DKP):**Coverage and duration:**

The Project is located in the watershed of Panjkora River in Dir Tehsil of Upper Dir District, covering an area of 412,570 acres. The project aims at halting and reversing the ongoing process of environmental degradation through integrated management of natural resources. The duration of the project is of seven years. The EU and Govt. of NWFP as a part of Environmental Rehabilitation Project in NWFP and Punjab (ERNP), fund this project jointly, together with two other sub- projects i.e. Natural Resources Conservation Project, Galiat and Murree Kahuta Development Project Murree.

Objectives

The DKP is aimed at restoration of degraded environment in Dir Kohistan through participatory natural resource management. The objectives of the project are spelt out below: -

- (i) To increase environmental awareness, and to promote the need to adopt conservation measures at local levels.
- (ii) To develop local economic potential and improve the status of the poor population particularly focusing on more vulnerable component of society, including women in the project area.
- (iii) To improve practices with respect to water run off control, forestry, and rangeland management in an area of about 35000 ha, together with improvement of agriculture and livestock management in approximately 70 villages of the tract.
- (iv) To stimulate a process of Community development by creation of village organizations, women's organizations, CBOs and associations in approximately 70 villages.

Approach

A village organization called VO is organized by being grafted it over the existing institution of jirga. VO is composed of representatives drawn from each khail proportionately, who are informally elected by the respective khails. Partnership is then established with these VOs. All interventions are identified, planned and implemented through Vos, while the departments. / project acts as a catalyst and facilitator only.

NRM interventions

The NRM menu offered by the DKP contains the following: -

-
- Communal land plantations with cost sharing in the ratio of 82:12 by project and Vos respectively, plantation is carried out solely by VOs.
 - Fruit nurseries at cost sharing in ratio of 41:49 by project and VOs/Farmers selected by VOs respectively.
 - Model orchards with ratio of 52:48 costs sharing by project and VO/owner selected by VO.
 - Free saplings of forest plants are supplied to VO. which in turn charge Re.0.25 / seedling from the farmers. This revenue goes to VOs funds to develop VDF.
 - Fruit plants with 20:80 shares are supplied through VO to farmers.
 - Poultry by the ratio of 31:69 of the cost.
 - Live stock at 20:80 ratios.
 - Maize and wheat quality seeds are supplied at 10:90 cost shares.
 - Fodder seed.
 - Water conservation.
 - Soil conservation.
 - Education of juvenile children
 - Village infrastructures (Hydropower, Roads, Streets, DWSS, Bridges)
 - Social organization.

NWFP forestry sector project (FSP)

Coverage and Duration

The NWFP, FSP, has been incepted to upscale and institutionalize social forestry (SF) approaches in the NWFP Forest Department. As such it is implemented as a program, which extends to the whole of NWFP. The project was initially incepted for seven years, but has been extended by the Asian Development Bank with mutual consent of GoP for another two years up to December 2004.

Objectives

- The FSP is charged with the responsibility to create an enabling environment for participatory working and upscale SF to program level in the NWFP Forest Department through: -
- Institutional and legal reforms in the department of forestry, fisheries and wildlife.
- Promoting participatory integrated resource management practices for forestry and natural resource development with active involvement of beneficiaries from both genders.

-
- Increasing the working capacity of DFFW and VDCs / CBOs and NGOs to take part in execution of field activities.
 - Increasing the absorptive capacity of villagers by organizing them in VDCs / SOs and CBOs to enable them to take part in planning, implementation and monitoring and evaluation of DFFW activities.
 - Sustain ably develop and manage the benefit of the local people.
 - Increasing firewood and fodder production in order to reduce the pressure on natural forests.
 - Protecting and maintaining the biological and physical environment of the area to ensure conservation of biodiversity.
 - Alleviating poverty and ensuring an equitable distribution of benefits emanating from NRM amongst the population.
 - Promoting NRM policies and activities that help the marginalized segments of the society, especially women to develop their potential, increase their contribution and share in rewards as equal partners.

Approach

The communities are organized into self reliant VDCs. An atmosphere of mutual trust and cooperation is developed between communities and Forest Department. Local capacities are developed and VDCs are encouraged to develop partnerships with the department to organize sustainable management of their resources.

Linkages are encouraged with other departments. The planning mechanism has also been decentralized and planning and implementation is done through VDCs.

NRM interventions

- Forest nurseries
- The VDCs and Farmers raise the nurseries. The plants are purchased by the FD and are then planted through VDCs. 100 % cost of seedlings is borne by the FD.
- Hillside plantation is done by VDCs on the basis of 100% subsidy.
- Conservation of Natural Resources through JFM.
- Farm Forestry is promoted, which contains private nurseries, free seedlings distribution, individual planting and group forestry interventions.
- Rangeland improvement through introducing controlled grazing & control grass cutting through VDCs
- Wild life and fisheries.
- NTFP

Project for horticulture promotion in NWFP (PHP)

Coverage and Duration

The PHP project extends to whole of NWFP. It is an extension of Malakand Fruit & Vegetable Project and is mandated to promote Horticulture in the entire NWFP with special emphasis on small

farmers and women. The existing project is working since 1996-97. MFVP was incepted in 1987. As such the project has considerable replicable information and experience.

Objectives

The objectives of the project are highlighted as under: -

- To upscale the innovations tested in Malakand fruit and vegetable Development Project.
- To assist government, and private sector in the formation of development policies and strategies.
- To secure financing for investment and to explore markets both inside and outside the country.
- To act as advisory bureau for investors in production, processing and marketing of horticultural products.
- To promote certified vegetable seeds and fruit plant industries in private sector

Approach

The implementation is done through NGOs and other projects like KDP, DDDP, DASP, AKRSP, and SRSP etc. They upscale the replication. Major emphasis is on promotion of privatization; so subsidies are kept at the lowest possible level.

NRM Interventions

- Production and supply of certified fruit plants.
- Production and supply of certified vegetable seeds.
- Promotion of practices and developing market linkages.
- Development of post harvest technologies.
- Promotion of products marketing.

Neelum-Jhelum valleys community development Project

Coverage and duration

The project extends to the whole of Distt: Muzaffarabad in AJK. The Project was originally launched for seven years ending on 30.6.99, but was subsequently extended up to 30.6.2003.

Objectives:

Objectives of the project are produced as under: -

- To improve the income and living conditions of communities especially poorest of the poor, through physical and human resource development of the area.
- To promote community participation in resource management and area development to ensure sustainability of project initiatives.
- To identify, introduce and promote proven skills and technologies suitable for adoption by the target group.
- Strengthen line agencies so as to enable them to deliver technical information required by rural population.

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- To increase the fuel-wood and forage production from private, communal and state lands through participatory approach in tree plantation and protection.
 - To arrest soil loss through vegetative cover and engineering works.
 - To provide job opportunities to rural labour force.

Approach:

The forum of delivery is community development group. The beneficiaries are organized into Community Development Groups (CDGs) and their capacities are built and linkages with line agencies are strengthened for transfer of technology to generate income and raise their living standards.

NRM Interventions:

NRM menu of the project contains following interventions:

- Provision of improved maize seed.
- Fodder seeds of oats, and mot grass.
- Crop rotation and provision of seed potatoes.
- Production of fruit plants.
- Production and provision of vegetable seeds.
- Provision of bee colonies for apiculture.
- Provision of breeding animals. (Cow bulls) rams bucks (buff. bulls)
- Poultry. Provision of six weeks old chicks.
- Soil conservation.
- Forest nurseries.
- Plantations on private, communal and state lands.

Sarhad Rural Support Program (SRSP)

Coverage and duration:

The SRSP is a rural support program. It covers the whole of NWFP, through its regional offices located at Peshawar, Kohat, Abbottabad and Mansehra. Its donors are NOVIB, ADB, WFP, TVO, IFAD, AUS-AID, PPAF, PHP, CIIP, and DFID, while funding from US-aid is underway.

Objectives

Major objectives of SRSP are outlined below: -

- To develop institutional and technical models for poverty alleviation, sustainable and equitable development.
- To raise income and equality in life of people, especially the poorest of the poor men and women.
- To provide an efficient and cost-effective service delivery mechanism for the Govt. and donor agencies in order to reach the rural poor.

It being an RSP follows the AKRSP model, which inculcates culture of self-reliance by building capital, skills and capacity at community level. It aims at developing human potential, their

resources and wisdom to organize them for collective / group-working and gradually getting developed into self-reliant entrepreneurs. SRSP emphasizes on stable social organizations and strives to: -

- Organize communities & initiate collective work spirit.
- Help in identifying genuine activists from amongst the communities to harness the potential of the people.
- Identify and prioritize the opportunities and needs of the people to be provided by outside agencies.
- Undertake feasibility studies to identify opportunities and needs in terms of people capacities, willingness, equity, sustainability and requirement of resources and their availability within and from outside.
- Arrange, secure and facilitate flow of required resources to the community.
- Monitor, lobby and establish linkages between communities and other development agencies such as government departments, district governments NGOs and donors.

NRM Interventions:

SRSP work in the fields of Forestry, Agriculture & Livestock. However, their package is flexible and may include any intervention, which donors, collaborating organizations and their partners intend to extend. Detail of existing NRM package is available in annex V.

Kalam Integrated Development Project (KIDP)

Coverage and duration

KIDP was an integrated rural development project jointly funded by SDC and government of NWFP. Its 1st phase started on 1st July-1981. At the start, working atmosphere was not conducive because of locals tension with provincial government over the issue of land settlement. But with the passage of time situation changed. Under various phases, the project continued up to June -1998. Initially project area was confined to Utror and Kalam. But in due course of time this design proved successful and KIDP established a good reputation at community level. The project was later extended to Madian and Behrain as well.

Objectives

- To promote community participation in resource management and area development to ensure sustainability.
- To improve the income and living conditions, of the communities through physical and human resource development.
- To provide job opportunities to rural labour force.
- To identify, introduce and promote skills and technologies suitable for resource development.

Approach

The project was very innovative & strived to develop very viable and productive approaches in the sector of forest management, agriculture extension, fostering of local self-help capacities and encouragement of decision making through community based organizations.

NRM intervention

The project worked in the field of forestry, agriculture, livestock education and infrastructure. The interventions include:

- Timber harvesting
- Nurseries
- Afforestation
- Double cropping
- Off season vegetable and introduction of improved varieties of fruit plants
- Quality seed for vegetable, potatoes.
- Livestock management.
- Live stock extension worker training.
- Education of juvenile children
- Social organizations
- Construction of timber extraction roads, village linkage roads paths and trails
- Hydel power generation.

Social forestry project Malakand Dir (SFPMD)

The Social Forestry Project Malakand (SFPM) with duration of 5 years was launched in 1987 as the entire activities were planned in Malakand agency only. Later it was extended to Dir as well and was renamed as social forestry project Malakand, Dir. The government of kingdom of Netherlands and the government of Islamic Republic of Pakistan sponsored both of these phases. The NWFP forest department: executed the project with technical assistance of DHV consultants from Netherlands and EDC consultants from Pakistan.

Objectives

The major objectives were to:

- Restore suitable vegetation to the denuded hillsides and marginal farmlands, to create an ecologically and economically improved living environment on sustainable basis.
- Develop extension for these field activities
- Stimulate institutionalization of the extension approach at community level and within the N.W.F.P forest department.

Approach

The project actively emphasized on the development of extension approach in social forestry and Establishment of village development committees (VDCs),

NRM interventions

Major focus under this project was upon Afforestation, Range management, tree improvement, extension, women's activities and training. A special touch, of this project was preparation of a village action plan in a phased manner through PRA called village land use plan (VLUP) with the consensus of local community and line department.

The main components of the project were:

- Improvement of the productivity of communal hill sides
- Farm forestry;
- Women in forestry;
- Extension and training;
- Physical infrastructure
- Monitoring and evaluation
- Institutional development
- Community organization
- Improvement of communal hillsides.
- Fodder spp/ grasses and village development schemes (vds).

Farm Forestry Project (FFP):

It is a project of SDC, which is being implemented by the IC. The project aims at privatization and introduction of all the components of farm forestry right from seed collection up to final harvest and marketing in the private sector on commercial basis. During the first phase, the project is focusing only on developing private nurseries. Farmer nurseries are being raised in Kurram, Karak and Haripur under the project. The project has just started and learnings are yet not pronounced.

List of NRM practices pursued by different projects

Annex-V

PROJECTS	SOCIAL ORGANIZATION	CAPACITY BUILDING	FORESTRY	AGRICULTURE	LIVESTOCK	ENTERPRISE DEVELOPMENT	PVIs	REMARKS
A K R S P	VO-representative, Collective – group work Renal dev., Capital generation, Skill development Local Resource mobilization, Linkages	LEW VFS – valley Skill: • Producti on • Manage rial • Co- operative Entrepreneurs development and management, Gender orientation Technical / specialized VMS	Social Forestry, Nursery privatization, Plantations, Tree Mgt., Seed collection	Fruit plants nurseries, inputs supply, vegetable gardens, orchard, grading, packing, storage marketing, Cereal crops, Fodder Crops.	Poultry, Fodder, Alpine pastures, Disease control, Feed improvement, Breed improvement, Animals hygiene.	Rice husking, Fish farming, Mushroom Sericulture , Credit facilitation, Marketing .	Land dev. Irrigation DWS, Micro-hydel stations, Wind mills, Biogas	
SRSP	VO Poverty alleviation, Delivery mechanism, - group working - Capital gen. - Linkages Credit Enterprise Dev. - W.P dev.	Trainings: -A E W , -LE W , -Grain Storage, -Enterprise, -Plumber, Welder, - Electrician, - Tailoring.	Facilitation of NRCP	Cereals – high yielding varieties, off-season vegetables, green houses, composting, container gardening IPM	Poultry, beetles, co- operative marketing	Income generating, sewing poultry, credit line of K.B loans SRSP collective marketing fruit preservation off- season vegetable.	Hand pumps gravity flow, lift irrigation tube wells, roads sanitation, street pavement.	
KIDP	Forestry Crops, Forest protection committees, Kara van, Graziers Groups, VO- Mohalla based, membership only for VDP (VDP -SDC)	- Trained Forest worker, - Master degree Forest (FD staff) - Local (Argil.)	Forest Mgt. - Working plan - Nursery - Harvesting,	<u>Improved farming system</u> - Inter-cropping - ins- cropping - Cereal crop Multiplications	- Poultry Production - VLLS - Fodders plot - Analysis of Existing system	Skill Dev. Vegetables nursery, Fruit nursery, credit facilitates, Squash, Jam, Handicaps,	Flood control, Drinking water supply, Bayan and road – rural roads, bridges, irrigation	Cost sharing in VDP

List of NRM practices pursued by different projects

Annex-V

PROJECTS	SOCIAL ORGANIZATION	CAPACITY BUILDING	FORESTRY	AGRICULTURE	LIVESTOCK	ENTERPRISE DEVELOPMENT	PVIs	REMARKS
	saving dev., PVI Planning, impl., subsidies.	Scholarships - Livestock - Agri (Short trainings) Specialized - Nursery - Planting - Agriculture School program, seed collection, Girls tuition center - TBS	extraction, marketing Seed collection, Planting/Regeneration in cut over areas Firewood collection - closing of saw mills/ wood units processing unit - Quomi check post.	- Subsidized & live fences - soil nutrients loss : Fruits private nursery, planting, model orchard, seed multiplication, off-season vegetable, potatoes, marketing surveys - Seed multiplication - Agri. Research - Agri. credit - Agri. Industries - On-farming trials - Storage trials	- Staff feeding trials -Care& vaccination training.	Bee keeping. Reservation & storage techniques, Kitchen gardening, seed production & storage.	channels, rural electrification.	
SSFPMD	VDC – Representative NR- Capital, Jirga capacity building. (DHV) VLUP – Planning Chart impl. (S.S.A) - VDF – Penalties - utilization of NRM Partnership	- VDC- community, form as NGO, training, tour, workshops, visit - Awareness program - Specialized trainings LEW,	- Farm Forestry - private nurseries, Group forestry, Bee keeping, Distribution of	Kitchen gardening	- Live Stock Training	VDF Male, Female saving program - Kitchen gardening - Embroidery - Fruit drying & processing	Water ponds, Waiting cabins on road sides, road, paths, culverts, footbridges, school boundary wall, street paving,	Dist. of improved stoves and _____.

List of NRM practices pursued by different projects

Annex-V

PROJECTS	SOCIAL ORGANIZATION	CAPACITY BUILDING	FORESTRY	AGRICULTURE	LIVESTOCK	ENTERPRISE DEVELOPMENT	PVIs	REMARKS
	VDC – capable for taking - NR decision.	Forestry, AEW - Women income generation TBA overseas ST, LT program	seedling. - VDC prog. Nursery, Aff. and Regen. On communal land, shrubs Mgt. and Utilization, seed multiplication plots , - Soil conservation, Check dams and Gabion (LSA, SSA) -VLUP, Range Mgt. Control grazing, control grass cutting - Water ponds, SSA plots, multiplication Plots.				irrigation & DWS ambulance, food production & Soil Reclamation.	
DKP	- Representational VO/ WO	- Village specialists	Farming -Farmers nursery	<u>Soil Mgt.</u> Testing, Decomposed	<u>Breed Impt.</u> Cows ,	- Seed - Fertilizers	- Sanitation - Irrigation	Med. Camps, Fish

List of NRM practices pursued by different projects

Annex-V

PROJECTS	SOCIAL ORGANIZATION	CAPACITY BUILDING	FORESTRY	AGRICULTURE	LIVESTOCK	ENTERPRISE DEVELOPMENT	PVIs	REMARKS
	<ul style="list-style-type: none"> - VDF - Tax penalties royalties - Skill Dev. Grafted on Jirga - Capital formation -IUCN (support organization). - Planning & impl. - Partnership linkages - Dependence for fund - No follow-up mechanism 	<ul style="list-style-type: none"> - Extension workers (Agri. – Hort, Livestock, Bee keeping, Forestry) - VOs exchange visits - poultry - Specialised training (Staff) - Technical services 	<ul style="list-style-type: none"> B/R - Distribution of plants - VO - Planting (Homestead, Agri. Fields) - School VO -Deptt. nursery -Female nursery - Aff. Over communal land - Promotion of natural reg. - Oak Mgt. (Gabion) - Soil conservation - Range Mgt. Controlled grazing, fodder crops, trees. 	<p>manures, Fertilisers, Pesticides.</p> <p>Cereals</p> <p>Double cropping in lower areas Wheat, Maiz improved Seed, Crop mgt.</p> <p>Trials</p> <p>Potato seed, groups Ent. Bee flora-Brasica, Sunflower.</p>	<ul style="list-style-type: none"> Stud Bulls, Goats, Sheep, Rams. - Feeding / fodder farm a. Fodder Crops (Oat Be seem, Mot. Grass) b. Range impt. - Health / disease control a. LEW b. Vaccination - De-worming - Livestock Mgt. a. Feeding b. Mineral supplement c. Houses - Poultry Dev. a. Broilers b. Faumy – IRR 	<ul style="list-style-type: none"> - Pesticides - Bee keeping - Poultry Dev. - Tailoring - Women Ent. Dev. a. Loan (groups) b. Vegetables - Kitchen Gardening - IGA identification - Private Fish farms 	<ul style="list-style-type: none"> Channel - Water supply - Road – bridges – paths - Hydrel power generation 	<ul style="list-style-type: none"> farms, River stocking protection hatchery, Mohala Schools, W/life, Habitat impt. Restocking of Chakor. Extension / Awareness, survey.
Forestry	Broad based & VDC,	- FD staff	FF Nurseries,	Vegetable & fruit	Livestock Mgt.	-Women income	Partnerships	W / life ,

List of NRM practices pursued by different projects

Annex-V

PROJECTS	SOCIAL ORGANIZATION	CAPACITY BUILDING	FORESTRY	AGRICULTURE	LIVESTOCK	ENTERPRISE DEVELOPMENT	PVIs	REMARKS
Sector Project	NR building, skill dev. CB for NRM - cap. Generation linkages, planning & impl. Partnership, subsidies to build capital. Capable as Jirga. (CD/FD)	training a. at SFS, forester, forest guard, Clerks b. Officers - Community (VDC, NGOs, Farmers) - V. specialist (Ag. LS, forestry) - Health TBA - Overseas (ST, LT) - In country Masters - W I Generation trainings	Dist. of seedling, GF, capacity building, fish ponds, sericulture, apiculture, NCFP. VDC - Nursery, Aff. control grass cutting, water ponds, N Reg. NR utilization, NTFP, sericulture, apiculture, Mushrooms	planting		schemes - NTFP based enterprises, water ponds, w/life farming, Apiculture - Kitchen gardening - Embroidery - Fruit processing - Mazri3 products.	for PVIs, irrigation, DWS, Hydel Project, Sanitation, community centers, W/ponds, road culverts & bridges.	fisheries , sericulture NTFP,
NJVDP	VO	Tie & dye,	-Nursery			Saving credit		

List of NRM practices pursued by different projects

Annex-V

PROJECTS	SOCIAL ORGANIZATION	CAPACITY BUILDING	FORESTRY	AGRICULTURE	LIVESTOCK	ENTERPRISE DEVELOPMENT	PVIs	REMARKS
		Mushrooms, poultry sewing, cutting, vegetables, _____ , embroidery, _____ plumbing, forestry, argi. LSE, study tours, fellowships.	- Aff. (VSF, SF, CF) - Soil conservation - Seedling distribution - Grass trials			embroidery loan, Bee keeping, Marketing, Plumbing, Tailoring, Handicrafts		
PHP	Interest groups fruit grown association, seed grower association, - Intermediary bodies - NGOS No subsidy, risk coverage for primary adopters	- on job trainings - Specialized horticulture		Fruit: - introduction of imported varieties, Import in multiplication techniques, privatization of nursery, plant certification, germ plasm conservation & proper center . Composting: Soil Mgt. Tunnel Germ plan. Vegetable: Vegetable off-season, early & late maturing varieties seasonal vegetables, seed production.		- off-season vegetable. - Fruit culture – drying and processing, - Seed multiplication - storage - Packing .		Develop-ment. of local horticulture.
FFP	- NGOS - Intermediaries		Commercial farm forestry,			Market orientation - Seedling		-Inputs supplied

List of NRM practices pursued by different projects

Annex-V

PROJECTS	SOCIAL ORGANIZATION	CAPACITY BUILDING	FORESTRY	AGRICULTURE	LIVESTOCK	ENTERPRISE DEVELOPMENT	PVIs	REMARKS
	(VC, Clusters) - No subsidy		nursery of 8000 to 10000 seedlings.			production - Tree Mgt. - Wood utilization		and cost record on scale, Marketing support

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