

**Training of Master Trainers for Participatory Rural Appraisal (PRA) in
Balkh and Nangarhar Provinces of Afghanistan to Identify Critical
Issues for Strategic Research & Extension Plan(SREP) preparation in
selected districts**

A Report by

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Chapter-I

Introduction

The rest of the world knows Afghanistan for civil war, terrorism and opium cultivation but for the government and the common people the real big and important issues are development, peace and prosperity. From the conditions under which Afghanistan finds it self at present, to take the country on the paths of development, is a very difficult task, if not impossible. Due to its geographical conditions, peoples and varied agro-climate, Afghanistan is full of strengths, opportunities, weaknesses and threats, so far as agricultural development is concerned. Any passerby who wades through the streets, and bazaar of Afghanistan, which are full with a variety of fruits, vegetables, and livestock can be suitably impressed with the colour, size, and variety of these agricultural products on display in the markets. If probed, it is clear that these beautiful agro products have their origin in the village, orchards and fields of Afghanistan.

Any one going out of Kabul by road to Jalalabad or Mazar-e-sharif can witness the grapes, pomegranate, apple, onion, potatoes, and fresh fish and even cut sugar cane being sold in poly bags by young and enthusiastic men who are a welcome change from the stereo-typed image of the people of this country as trigger happy and living on the edge of terror. The phenomenon of selling the local produce particularly fresh fruits, vegetables, and dry fruits is not only evident in areas near the cities but also deep in the country side; at the same time, seeing trucks laden with onion in gunny bags destined for some far off place are a common site on the highways of Afghanistan. Seeing the markets and fields in Afghanistan, it is clear that high value agricultural products like meat, fruits and vegetables, new methods of cultivation, and new crops are being practiced in the villages. Also evident is the fact that the produce has local origins, and that serious efforts are on to bring a change in the agricultural scenario of the country through innovations in agricultural production. No doubt, this is the results of the hard work of Afghanistan farmers, working under adverse conditions and of course with some support from the friendly countries/ donors.

While it is true, that a country under civil war for such a long period has a severely damaged infrastructure that is necessary for agricultural development, especially the agricultural research, extension and educational infrastructure in a very poor shape and in need of immediate remedial measure to improve their capacity for taking up the challenges of a globalized economy in the twenty first century.

The strengths, weakness and opportunities of Afghanistan agriculture, the skill and capacity available with the farmers of this country, new experiences, and its pre-war brand equity in the external markets could become the starting point for giving a new direction to Afghanistan agriculture in this globalized 21st century economy. With USAID funded AWATT project's Technology Transfer component, the efforts to develop the agriculture sector in two selected province, Balkh and Nangarhar, and four districts, Balkh, Daulatabad, Behsud and Rudat, are an experiment to reform the way the country's extension services are being carried out. The results of this pilot-testing can then be up-scaled to other districts and provinces within the country. Therefore, the motive of preparing this document is to formulate a methodology for developing a strategic agricultural research and extension plan (SREP) for selected districts in the Balkh and Nangarhar provinces of Afghanistan.

Chapter-II

Participatory Rural Appraisal -Methodology

Background: Technology Transfer Component of AWATT

The goal of technology transfer component of Afghanistan Water & Agriculture Technology Transfer (AWATT) project is to improve the livelihoods of rural households and communities in selected provinces and districts within Afghanistan by making more productive use of surface- and ground-water resources by helping farmers to;

- 1) Diversify their farming systems through the use of high-value, water-efficient crop and livestock systems; and
- 2) Learn how to use more sustainable land and water management practices within different ecosystems in each district.

This goal of AWATT is proposed to be achieved by pilot-testing a sustainable and integrated water and land management strategy in selected districts and provinces that will introduce or expand the use of high-value, water-efficient crop and livestock systems to increase farm household income. Where these new agricultural innovations and/or value-added systems are proven to be effective, then the next step will be to scale-up these innovations to other producer/farmer groups within the current and/or other comparable agro-ecological zones/districts within the country. An additional purpose will be to organize farmer, producer, community and/or self-help groups (especially for rural women) at the community level so they can learn procedures for marketing specific high-value crops and products, as well as in managing their water resources at the community level.

The technology transfer component of AWATT is being pilot tested in two provinces namely, Balkh and Nangarhar provinces of Afghanistan. While Balkh is located in the Northern Mountain Zone, Nangarhar is in the Eastern Mountain Zone of the country

Orientation at Top: Training the National Extension Staff and Policy makers

The national and provincial extension officials in MAIL were oriented about this new market-driven extension model and were exposed to this proposed approach in detail. The orientation was done in Kabul for the senior officers who are responsible for extension policy planning and its implementation in Afghanistan, and also in Mazar-e-sharif and Jalalabad for extension officials at the provincial level. They were informed about the purpose and rationale for training the key members of the provincial and district extension staff on how to conduct a PRA and then develop a SREP for the selected district. They were also informed that the exercise would help them identify key constraints and potential market opportunities that can increase farm household income for different types of farm households within each of the two selected districts falling in the Balkh and Nangarhar provinces.

The extension department officers, research workers, teachers & students from the agriculture faculty and progressive farmers were oriented about the AWATT project and this new market-driven extension model in detail. They were informed about the purpose and rationale for the training to be conducted on PRA and then to develop a SREP for the selected districts of Balkh and Nangarhar provinces. They were also informed that this exercise will help in identifying key

constraints and potential market opportunities that can increase both yield and household income for different category of farm households in two selected districts (each) in both the Balkh and Nangarhar provinces.

An Overview of PRA Training

Training the Field Extension Staff

The training programme on PRA was designed to develop the master trainers for developing SREP in two selected pilot province in Afghanistan with the objective to train the district extension/research workers in Participatory Rural Appraisal (PRA) methodology to collect required information from the village and also to take people participation (and their perceptions) into consideration in developing a Strategic Research and Extension Plan (SREP) for the selected district(s) in both the Balkh and Nangarhar provinces. The details of trainees and the training approach can be seen at **Annexure-II and III**.

A team of twenty four persons were also selected for in-depth PRA training in both the pilot provinces. They were selected on the basis of different discipline, namely agronomy, horticulture, livestock, plant protection, and teacher & students from the agriculture faculty. Their willingness, as well as their knowledge and experience were also considered, so that after the training programme they could carry out the PRA field exercise in the selected villages of the two provinces.

Identification of Micro-situations

After formal introduction of the participants, facilitators, and AWATT officials about the training course the first task was given to the participants to draw the maps of the selected districts in identifying four villages in a district on the basis of their micro- situations leading to irrigated and rainfed agriculture.

Selection of village

As a result of the orientation programme based on the distinct agro-ecological situations, presence of different agricultural enterprises, approach to the districts, security and other logistic criteria; two districts namely Balkh and Dawlat Abad were selected in Balkh province and Behsud and Rudat in Nangarhar province by the participants in the training programme. The local extension staff in each district was to carry out the PRA so as to identify important water and land resource problems that are confronting the different categories of farmers within the different micro-situations of each district, as well as to identify innovative farmers and other market opportunities that might be pursued in developing value-chains for potential high-value (HV) crop and livestock products.

The participants were randomly divided into two groups and were put to a task. At the completion of the task review, which was done by the facilitators in the general session and the concept of PRA was discussed with the live example of making the district map by the participants to confirm that “they know we do not know. The whole issue of participation and perception of the concerned persons regarding their life and condition is most important as it adds value to understanding and is important for sustainable development.

The PRA training was started with twenty four participants and the training was based on experiential learning, in facilitation mode, through task cycle method. As a result, a task was given to the participants to select at least four villages in each identified district i.e. Balkh and Dawlat Abad in Balkh and Behsud and Rudat in Nangarhar; based on the major criteria of availability of irrigation water and also the other considerations in pursuing a farming systems approach, along with the security and logistic arrangements. The participants selected the villages in a district-wise group work, done in two groups on day one of this first exercise, and then they followed the method of mapping, discussion and finalization of their task results. During the discussion, based on the review of the groups work, the philosophy, rational, history and development of PRA were introduced by the facilitators. The participants identified the representative village as follows:

Table-1: Selection of districts and representative villages in Balkh Province

Name of Districts	Name of Villages	Major Consideration	Location in the district
Balkh	Hisarak	Irrigated	Northern part
	Hiwad	Irrigated	Eastern part
	Taraki	Less Water	Western part
	Alkuchi	Less Water	Western part
Dawlat Abad	Char Baghe Sayeddan	Irrigated	
	Markez Wolus-Wali	Irrigated	Central part
	Bagh Shor	Less Water	
	Qarshigok	Less Water	

Table-2: Selection of districts and representative villages in Nangarhar Province

Name of District	Name of Villages	Major Consideration	Location in the district
Behsud	Naghlo	Irrigated	East
	Khosh-gumbad	Irrigated	Central
	Qala-e-janankhan	Irrigated	North
	Akhunzada	Irrigated	South
Rudat	Baro	Rainfed	South west
	Mazina	Rainfed	North
	Hisarshahi	Rainfed	Central
	Hisarak	Rainfed	Far north

Participatory Rural Appraisal

Participatory Rural Appraisal (PRA) was understood by the participants as a tool or methodology for understanding the perception, knowledge, skill, practice, and situation of the farmer and also to enhance their participation as input in the program planning process. The following section gives a brief account of the tools and techniques used to train the participants. The focus of the PRA training was on rational, philosophy, history and origin of PRA and trainees were informed that the three pillars of PRA were as follows:

a. Behavior & Attitude (B&A)

B&A are to be observed and practiced at the personal level by the PRA team members, keeping in mind the following points: respecting people, learning from people, listening carefully, team work, etc.

b. Methods/ Tools

These skills have to be learned professionally and they develop over time with practice. This process covers mainly different tools and techniques of PRA, mainly designed to generate accurate information and to enhance people's participation.

c. Sharing

This element mainly covers the process part of conducting a PRA and is related to the sharing and analysis of information at different levels within the community, within the PRA team and with other PRA teams (in other districts and provinces) and participating institutions.

PRA Teams

A PRA sub-team consists of three persons were also identified by the district team itself for each village. It was decided to add 1-2 persons to each sub-team at the district level while the actual data collection work is being done.

Finalization of Check list

The requirement and need for information / data collection was initiated by the facilitators in light of district level SREP preparation specific to Afghanistan conditions. The check list was revised after getting the feed back of the Team members through a Group task specifically meant to identify the issues and enterprises relevant for Afghanistan. The detailed check list has been listed at **Annex-III**

PRA Tools

Details of the tools and techniques to which the participants were exposed to are given below:

a. Semi-Structured Interview:

PRA semi-structured interviews (SSI) are basically a skill rather than a tool. It can be used effectively alone or with other tools to get fuller meaning of the information collected in less time and with the full participation of the people. It is also used for Focused Group Discussion (FGD). Without following SSI, limited accurate information can be derived. By using SSI alone, especially when time is limited and task is high, much useful information can be derived. During the training, SSI was used effectively by the participants in generating information related to the check-list for preparation of SREP.

b. Transect Map:

The Trainees were informed about this unique PRA tool, i.e. transect. As a tool of PRA, it has a specific role in understanding the agricultural scenario of the village. This is the only tool in PRA that can give a full picture of the present agricultural status with precision. It provides a cross-sectional representation of the different farming situations, the enterprises/commodities and their comparison against the observed parameters. A transect is different than the resource

map despite area of overlap. The resource map provides a birds-eye view of village with a focus on natural resources. It is generally done after a resource map and therefore, helps in triangulation. It also helps in taking forward the process of problem identification, searching opportunities, solutions, options, indigenous technical knowledge (ITK) and success stories, etc

c. Maps

Maps in PRA are different from other regular conventional maps in significant ways. It is made by the people on the ground with the local materials, not to the scale and fixed direction. It depicts what the local people believe to be relevant and important for them. Thus it reflects their perceptions of the social dimensions of their realities with the high degree of authenticity.

i. Social Map:

Social map is the most popular method in PRA. It seeks to explore the spatial dimension of people's realities. The focus here is on the depiction of habitation patterns and the nature of housing and social infrastructure like roads, school, drinking water, etc. Thus, the information related to understanding of the people, like the population data, education, occupation, number of workers engaged in agricultural / non-agricultural work, ethnic groups, and other information required in preparing the SREP that can be collected through social mapping. It is very strong tool of PRA and it is also useful in relation building with the local people.

ii. Resource Map:

Resource map is another popular PRA tool. The resource map focuses on the natural resources present within the areas controlled by the village or locality, especially land, soil, rivers, streams and other water bodies; hills, mountains, and forests, as well as other vegetation, etc. For agricultural purposes it may also depict the fields, types of commodities being produced or other enterprises located within the village. Thus, a resource map reflects how people view their own locality, based on their perception of their natural resources.

d. Well-Being Ranking:

Well-being ranking, also known as wealth ranking, is another PRA tool that is commonly used in ranking and grouping households on the basis of the detailed well-being criteria as perceived by the villagers themselves, rather than only on the basis of income and wealth. It is based on the perception of the people. It helps to understand the local people's conception of wealth, well-being and their views on socio-economic disparities between households. Well-being is culture specific and is difficult to measure. Well-being ranking, however, provides a unique method for exploring local people thinking on well-being. The concept of this particular tool of well-being ranking has been used to segregate the farming community to understand the types of holding and an assessment of total land they possess in the village.

e. Trend Analysis:

Trend analysis is a popular tool of PRA used to explore the time dimension of change in certain variables over span of time. It is thus people's account of the past and how things have changed and hence also provide a historical perspective. Trend analysis was exposed in the training programme to know the changes whether positive or negative with the reasons why, over the period of time, in relation to the area/number, total production and productivity of the major commodities within the major enterprise of the village.

Chapter-III

Issues/Problems Emerging out of PRA in selected Provinces/Districts

The training on PRA tools and techniques, along with the discussion, and finalization of the check list for data collection through PRA by the different teams in selected villages was done at both Mazar-e-sharif and Jalalabad. After the successful completion of the training of Master Trainers, the mock PRA exercise the Team were sent to the villages selected for collecting information for a day, considering the time, cost and security constraints¹. The detailed analysis is yet to be done; however, the details of various issues identified by the PRA teams, and some success stories observed in the different villages/districts have been presented in the next chapter. The information has been presented for different provinces and for different micro-situations district-wise for arriving at the strategies to deal with these issues and the points of interventions that could be taken up under the AWATT project.

Table-3: Issues / Problems Emerging out of PRA in selected Provinces/Districts

Province →	Balkh				Nangarhar	
District →	Balkh		Daulatabad		Behsud	Rudat
Micro Situation →	Irrigated	Rainfed	Irrigated	Rainfed	Irrigated	Rainfed
Issues/Problems↓						
Natural Resources						
Climate, Land and Soil						
Huge tracts of undulated land	Y	Y	Y	Y	N	Y
Poor soil health due to improper application of organic matter	Y	Y	Y	Y	Y	Y
Unsustainable land use practices involving overgrazing, deforestation, and cultivation of marginal lands	Y	Y	Y	Y	N	Y
Variable climatic conditions and low rainfall leading to	Y	Y	Y	Y	Y	Y

¹ Due to administrative reasons, the PRA in the selected villages of both the provinces could be done for only one day; this severely hampered the collection of information. Also, the Facilitators did not get time to meet the PRA Village Teams for getting their feedback, search for missing links and revisiting the selected villages. The present exercise, therefore, could analyze only the critical issues and gaps in technology adoption. To develop a Strategic Research and Extension Plan (SREP) for the pilot districts, a more in-depth PRA with sufficient time for the follow-up/ revisiting the selected village/ and collection of primary and secondary information would be needed to arrive at the critical issues, strategies and interventions; identifying innovations by the farmers and success stories for up-scaling and replication, to meet the objectives of the Technology Transfer component of AWATT project.

increased vulnerability to drought						
Cultivation of rangeland by communities to mitigate the effects of drought	Y	Y	Y	Y	Y	Y
Water Resources						
Severe water shortage	N	Y	N	Y	N	Y
Management of natural water resources difficult due to destruction of traditional irrigation and water harvesting infrastructure	Y	Y	Y	Y	Y	Y
Improper selection of crops in water scarce areas putting pressure on irrigation sources	Y	Y	Y	Y	Y	Y
Lack of proper practices for managing surface and ground water resources	Y	Y	Y	Y	Y	Y
Poor management and upkeep of state owned water management schemes	Y	Y	Y	Y	Y	Y
Vegetation/ Forest cover/ Range lands						
Huge barren tracts leading to desertification	Y	Y	Y	Y	N	Y
Illegal felling of forest trees leading to fast removal of vegetative cover from land	Y	Y	Y	Y	Y	Y
Poor vegetative cover leading to reduced grazing areas and soil erosion	Y	Y	Y	Y	Y	Y
Widespread degradation of both forests and rangeland, flooding, water scarcity due to removal for vegetative cover	Y	Y	Y	Y	Y	Y
Agriculture production systems						
Crop management						
Stagnant and low yield of major cereal and other field crops leading to low income to the farm households	Y	Y	Y	Y	Y	Y
Non-availability of quality seed material for wheat, rice, maize, barley	Y	Y	Y	Y	Y	Y
Low use of farm machinery	Y	Y	Y	Y	Y	Y
Standard package of	Y	Y	Y	Y	Y	Y

practices for different crops not yet available						
Huge gap in needs and availability of Public Extension functionaries at district and village level to handle the knowledge needs of the farmers	Y	Y	Y	Y	Y	Y
Lack of mobility support to extension staff leading to their inability in moving to the fields	Y	Y	Y	Y	Y	Y
Lack of awareness about the Integrated Nutrient Management (INM) and Integrated Pest Management (IPM) practices.	Y	Y	Y	Y	Y	Y
Non-adoption of soil test based fertilizer application as testing facilities do not exist at district level	Y	Y	Y	Y	Y	Y
Non-availability of situation specific varieties for field crops	Y	Y	Y	Y	Y	Y
Unorganized farmers	Y	Y	Y	Y	Y	Y
Tillage practices primitive and causing loss of soil physical properties	Y	Y	Y	Y	Y	Y
Fodder and forage crops not given preference in crop rotation leading to scarcity of fodder	Y	Y	Y	Y	Y	Y
Lack of access to rural finance	Y	Y	Y	Y	Y	Y
Lack of High value cash crops in irrigated areas	Y	Y	Y	Y	Y	Y
Water Management						
Lack of scientific on-farm water management practices	Y	Y	Y	Y	Y	Y
Improper selection of crops in areas with less water availability	Y	Y	Y	Y	Y	Y
Predominantly Wheat-Rice sequence followed, putting pressure on irrigation sources	Y	Y	Y	Y	Y	Y
Prolonged period of water scarcity during growing season affecting crop yields	Y	Y	Y	Y	Y	Y
Lack of suitable & promising	Y	Y	Y	Y	Y	Y

crop varieties /cultivars for rainfed conditions						
Lack of proper package and practices for crops in water deficient areas	Y	Y	Y	Y	Y	Y
Mono cropping leading to improper utilization of natural resources	N	Y	N	Y	N	Y
Lack of scientifically designed water harvesting structures leading to wastage of water	Y	Y	Y	Y	Y	Y
Unorganized farmers	Y	Y	Y	Y	Y	Y
Horticulture Production System						
Under utilization of horticulture based natural resources	Y	Y	Y	Y	Y	Y
Poor maintenance and upkeep of orchards	Y	Y	Y	Y	Y	Y
Very few new orchards being planted in traditional areas due to lack of water	Y	Y	Y	Y	Y	Y
Lack of good quality saplings and quality seed material for new plantations	Y	Y	Y	Y	Y	Y
Scientific fertigation, training and pruning not practiced in orchards and plantations	Y	Y	Y	Y	Y	Y
Lack of Multi-purpose trees for fodder and fuel.	Y	Y	Y	Y	Y	Y
Lack of training facilities for nursery raising and plant propagation	Y	Y	Y	Y	Y	Y
Knowledge and skill gap in scientific production.	Y	Y	Y	Y	Y	Y
Non-adoption of INM and IPM practices.	Y	Y	Y	Y	Y	Y
Distress sale of fruits and vegetables reducing profitability	Y	Y	Y	Y	Y	Y
Unorganized growers.	Y	Y	Y	Y	Y	Y
Lack of cooling and storage facilities for fresh fruits and vegetables.	Y	Y	Y	Y	Y	Y
Lack of post-harvest value addition and handling techniques	Y	Y	Y	Y	Y	Y
Reduced export earning potential from Agro-forestry	Y	Y	Y	Y	Y	Y

and horticulture due to their destruction						
Livestock Production System						
Lack of improved breeds of sheep, goat and cattle	Y	Y	Y	Y	Y	Y
Lack of cross breeding and AI programme	Y	Y	Y	Y	Y	Y
inadequate extension and support services	Y	Y	Y	Y	Y	Y
Poor health of livestock	Y	Y	Y	Y	Y	Y
Inadequate mobility and supervision.	Y	Y	Y	Y	Y	Y
Inadequate livestock assistants for door service.	Y	Y	Y	Y	Y	Y
Lack of proper health care to animals/ birds	Y	Y	Y	Y	Y	Y
Severe shortage of green fodder and poultry feed	Y	Y	Y	Y	Y	Y
Poor sanitation and housing facilities for livestock and birds	Y	Y	Y	Y	Y	Y
Unorganized marketing in rural areas	Y	Y	Y	Y	Y	Y
Scientific knowledge and skill gap among farmers	Y	Y	Y	Y	Y	Y
Limited financial back up and insurance.	Y	Y	Y	Y	Y	Y
Unorganized market forcing distress selling.	Y	Y	Y	Y	Y	Y
Socio-economic Issues						
Fragmented and small land holdings	Y	Y	Y	Y	Y	Y
Low involvement of women in agriculture	Y	Y	Y	Y	Y	Y
Lack of access to credit, and market,	Y	Y	Y	Y	Y	Y
Unorganized farming community	Y	Y	Y	Y	Y	Y
Costly and spurious inputs resulting in rise in cost of production	Y	Y	Y	Y	Y	Y
Distress sale of produce due to lack of money with the farmers	Y	Y	Y	Y	Y	Y
Non-adoption of risk minimizing and low cost technologies.	Y	Y	Y	Y	Y	Y
Lack of post harvest, cold	Y	Y	Y	Y	Y	Y

storage, storage and processing facilities in the villages						
Lack govt. supported procurement and support price leading to unstable prices.	Y	Y	Y	Y	Y	Y
Limited knowledge about governmental schemes.	Y	Y	Y	Y	Y	Y
Institutional issues						
Lack of legal framework on tenure, user rights, and oversight responsibilities for natural resources	Y	Y	Y	Y	Y	Y
Collapse of government institutions, has led to the control of natural resources by local elites	Y	Y	Y	Y	Y	Y
Lack of suitable agency having overall responsibility for the protection of natural resources	Y	Y	Y	Y	Y	Y
Lack of qualified manpower for research and extension work both at the national and provincial level	Y	Y	Y	Y	Y	Y

Chapter-IV

Critical issues their strategies and proposed intervention

The issues/problems identified through the conducting of PRA in four selected districts of Balkh and Nangarhar provinces have been further analyzed, prioritized and identified as critical issues. The strategies and proposed interventions were summarized in this chapter and presented in Table-4.

Table-4: Critical issues their strategies and proposed intervention

S.No	Critical Issues	Strategies	Proposed Interventions
A	Natural Resources		
1	Poor soil health due to improper application of organic matter	Capacity Building and Training	1. Capacity building of the local communities and farmers on Integrated Nutrient Management (INM). 2. Development of leaflets, CDs, films and other material in local language for distribution for popularizing the new technology
2	Improper selection of crops in water scarce areas putting pressure on irrigation sources	Training and demonstration	1. Training and demonstration at the farmer's fields on various rainfed crop and varieties. 2. Development of leaflets, CDs, films and other material in local language for distribution for popularizing the new technology
3	Lack of proper practices for managing surface and ground water resources	Exposure visits, Training and demonstration	1. Demonstration, training on methods for management of surface and ground water. 2. Exposure visits to successful sites where such methods are being practiced. 3. Development of leaflets, CDs, films and other material in local language for distribution for popularizing the new technology
4	Widespread degradation of both forests and rangeland, flooding, water scarcity due to removal for vegetative cover	Awareness and capacity building of the communities	1. Awareness programmes through participation of local communities with the help of local NGOs. 2. Exposure visit to sites where forest and rangeland management practices under dry land conditions are successfully demonstrated. 3. Development of leaflets, CDs, films and other material in local language for distribution for popularizing the new technology
B	Field Crops	Strategies	Proposed Interventions
1	Stagnant and low yield of major cereal and other field crops leading to low income to the farm households	Diversification, value addition and demonstration of new technology	1. Introduction of suitable high value crops like aromatic and medicinal crops 2. Market led value addition of the produce for enhancing income of the farmer. 3. Demonstration of new and improved technology for filling the gap. 4. Development of leaflets, CDs, films and other material in local language for distribution for popularizing the new technology/ intervention.

			5. Introduction of path breaking technologies like SRI technology for rice cultivation and resource conservation technologies like zero-tillage machines in rice wheat cropping system.
2	Non-availability of quality seed material for wheat, rice, maize, barley	Mobilization, of farmers for seed production through farmers organization	<ol style="list-style-type: none"> 1. Formation of farmer's interest groups (FIGs) on seed production. 2. Training, capacity building and demonstration of suitable varieties. 3. Exposure visits to successful sites where such farmer groups are engaged in seed production. 4. Handholding support to these groups for some time till they are able to handle the affairs of their organization. 5. Distribution of mini-kits of improved variety seeds among farmer groups. 6. Development of leaflets, CDs, films and other material in local language for distribution for popularizing the new technology
3	Low use of farm machinery	Awareness through training, demonstration	<ol style="list-style-type: none"> 1. Demonstrations on zero tillage machines, for sowing of wheat 2. Some machines may be provided to FIGs willing to use them on cost sharing basis. 3. Development of leaflets, CDs, films and other material in local language for distribution for popularizing the new technology
4	Standard package of practices for different crops not yet available	On-farm research, field trials and validation	<ol style="list-style-type: none"> 1. Research stations in both the provinces should take up on-farm research on crops like wheat, rice, barley, maize, oats, pulses, forage and oilseeds for developing situation specific technology. 2. Already available technological packages may be validated under local conditions. 3. Conduct technology validation trials on farmer's fields, demonstration, and field days. 4. Development and dissemination of standard package & practices for important crops through leaflets, CDs and posters in Dari and Pashto for distribution among the farmer groups.
5	Lack of mobility support to extension staff leading to their inability in moving to the fields	Providing support to extension staff for mobility in the field	<ol style="list-style-type: none"> 1. Selected field extension functionaries in all the districts, may be provided support in form of motor cycles along with cost of fuel, to move into the field, for conducting demonstrations, field days and other extension activities.
6	Lack of awareness about the Integrated Nutrient Management (INM) and Integrated Pest Management (IPM) practices.	Training and demonstration	<ol style="list-style-type: none"> 1. Demonstration on farmers' fields to show effects of INM& IPM. 2. Capacity building of farmers on INM and IPM through some reputed institution. 3. Providing IPM kit, and bio-pesticides on cost sharing basis. 4. Exposure visit to successful sites. 5. Development of leaflets, CDs, films and other material

			in local language for distribution for popularizing the new technology
7	Non-adoption of soil test based fertilizer application as testing facilities do not exist at district level	Training and demonstration	<ol style="list-style-type: none"> 1. Demonstration of INM in farmer's fields. 2. Training of farmers and FIG members on use of low cost Field Testing Kit. 3. Providing low cost soil testing kits to the FIGs. 4. Development of leaflets, CDs, films and other material in local language for distribution for popularizing the new technology
8	Non-availability of situation specific varieties for field crops	Adaptive research on participatory seed selection	<ol style="list-style-type: none"> 1. On-farm participatory breeding trials. 2. Testing of improved genotypes under different situations. 3. Making seeds available to the farmers/FIG under PPP.
9	Fodder and forage crops not given preference in crop rotation leading to scarcity of fodder	Demonstration and training on fodder production	<ol style="list-style-type: none"> 1. Demonstrations on forage crops under different micro-situations. 2. Introduction of new forage crops/varieties. 3. Trainings on fodder management. 4. Development of leaflets, CDs, films and other material in local language for distribution for popularizing the new technology
10	Lack of High value cash crops in irrigated areas	Awareness, Organizing HVC growers, Introduction of new HV crops/ varieties, Demonstrations, Training	<ol style="list-style-type: none"> 1. Exposure visit for Farmers' and FIG leaders to areas where HV crops are being grown/ cultivated. 2. Introduction of new HV crops/ varieties based on market demand. 3. Testing the performance of these new HV crops/ varieties under different micro-situations. 4. Demonstrations to educate the farmers about new HV crops/ Varieties. 5. Providing market linkages to the Farmers' / FIG growing these new crops. 6. Development of leaflets, CDs, films and other material in local language for distribution for popularizing the new technology
11	Unorganized farmers	Awareness, Exposure visits, and Training	<ol style="list-style-type: none"> 1. Success stories of successful groups to be shown to willing farmers in form of films on their activities for creating awareness. 2. Formation of commodity based Farmer's Interest Groups, with the help of local NGOs and other community leaders. 3. Exposure visits to successful areas/ enterprises where group activities are running successfully. 4. Training on group dynamics, record keeping and team management, and marketing skills.
C	Water management	Strategies	Proposed Interventions
1	Lack of scientific on-farm water management practices	Training, Demonstration	<ol style="list-style-type: none"> 1. Training the farmers on On-farm water management. 2. Demonstration of improved water management practices on farmer's field. 3. Development of leaflets, CDs, films and other material in local language for distribution for popularizing the

			new technology
2	Lack of suitable & promising crop varieties /cultivars for rainfed conditions	Training, Demonstration and exposure visit	<ol style="list-style-type: none"> 1. Trainings on water efficient crops/ varieties. 2. Exposure visit to successful sites growing water efficient crops. 3. Demonstration of farmer's fields on suitable crops/ varieties. 4. Development of leaflets, CDs, films and other material in local language for distribution for popularizing the new technology
3	Lack of proper package and practices for crops in water deficient areas	Adaptive research	<ol style="list-style-type: none"> 1. Adaptive research for developing package and practices under rainfed conditions. 2. Demonstration on the findings of adaptive research. 3. Field days on research/ demonstration plots. 4. Development of leaflets, CDs, films and other material in local language for distribution for popularizing the new technology.
4	Lack of scientifically designed water harvesting structures leading to wastage of water	Awareness, Training, Exposure visits, Demonstration	<ol style="list-style-type: none"> 1. Creating awareness about scientific water harvesting structure through exposure visits to successful sites. 2. Trainings on scientifically designed structures for water harvesting. 3. Demonstration on water-shed approach.
5	Unorganized farmers	Awareness, Exposure visits, and Training	<ol style="list-style-type: none"> 1. Success stories of successful groups to be shown to willing farmers in form of films on their activities for creating awareness. 2. Formation of Water User Association, with the help of local NGOs and other community leaders for Participatory Water management. 3. Exposure visits to successful areas/ enterprises where WUA activities are running successfully. 4. Training on group dynamics, record keeping and team management, and marketing skills.
D	Horticultural Crops	Strategies	Proposed Interventions
1	Under exploitation of horticulture based natural resources	Diversification, and intensification	<ol style="list-style-type: none"> 1. Introduction of new HV enterprises like beekeeping, mushroom production, sericulture, medicinal and aromatic plants, exotic vegetables in existing horticultural production system . 2. Training and demonstration on these new high value crops. 3. Exposure visits to areas where these enterprises are being taken successfully. 4. Organizing farmers into commodity/ enterprise based Farmer's Interest Groups, building their capacity and providing market linkages. 5. Development of leaflets, CDs, films and other material in local language for distribution for popularizing the new enterprises/ crops/ technologies. 6. Collaboration of Sericulture department/institute of Afghanistan with Indian Sericulture Institute in

			Bangalore for capacity building and sharing of experience.
2	Poor maintenance and upkeep of orchards	Training and Demonstration	<ol style="list-style-type: none"> 1. Training of farmers/ FIGs on orchard management. 2. Demonstration on farmer's field. 3. Development of leaflets, CDs, films and other material in local language for distribution for popularizing the new technology
3	Very few new orchards being planted in traditional areas due to lack of water	Training and demonstration	<ol style="list-style-type: none"> 1. Training the potential growers on micro-irrigation techniques and its maintenance. 2. Making saplings of fruits available to potential growers for establishment of new orchards on cost sharing. 3. Demonstration on establishment of new orchard under water scarce conditions on cost sharing basis. 4. Making micro-irrigation kit available to new orchard growers on cost sharing basis. 5. Development of leaflets, CDs, films and other material in local language for distribution for popularizing the new micro-irrigation technology
4	Lack of good quality saplings and quality seed material for new plantations	Training and exposure visits	<ol style="list-style-type: none"> 1. Training of farmer's/ farmer groups on plant propagation techniques. 2. Exposure visit to successful entrepreneur's orchard doing similar work. 3. Providing good quality mother plants to trained farmers/ farmer groups for development of their own nurseries. 4. Hand holding support for some time, to new nurseries for market linkages. 5. Development of leaflets, CDs, films and other material in local language for distribution for popularizing the plant propagation and nursery raising.
5	Scientific fertigation, training and pruning not practiced in orchards and plantations	Training and exposure visits	<ol style="list-style-type: none"> 1. Training the orchard growers on scientific management of orchards. 2. Exposure visits to scientifically managed orchards at research stations/ Faculty of Agriculture. 3. Development of leaflets, CDs, films and other material in local language for distribution for popularizing the new technology
6	Knowledge and skill gap in scientific production.	Training	<ol style="list-style-type: none"> 1. Trainings of farmers/ farmer groups on scientific cultivation and skill improvement for growing fruit, vegetable, and flowers. 2. Development of leaflets, CDs, films and other material in local language for distribution for popularizing the new cultivation technology for different fruit, vegetable and fruit crops.
7	Non-adoption of INM and IPM practices.	Training and Demonstration	<ol style="list-style-type: none"> 1. Training on INM and more specifically IPM in fruit and vegetable crops. 2. Demonstration on INM and IPM in fruit and vegetable crops. 3. Providing IPM kits and bio-pesticides to horticultural

			farmers/ farmer's groups on cost sharing basis. 4. Development of leaflets, CDs, films and other material in local language for distribution for popularizing the INM and IPM technology in horticultural crops.
8	Unorganized growers	Awareness, Exposure visits, and Training	1. Success stories of successful groups to be shown to willing farmers in form of films on their activities for creating awareness. 2. Formation of commodity based Farmer's Interest Groups, with the help of local NGOs and other community leaders. 3. Exposure visits to successful areas/ enterprises where group activities are running successfully. 4. Training on group dynamics, record keeping and team management, and marketing skills.
9	Lack of post-harvest value addition and handling techniques	Training	1. Training of farmers and farm women on post harvest management of fruit and vegetable crops. 2. Training to farm women on flower cultivation, harvesting, packaging and marketing. 3. Training on grading, standardization, value addition, packaging and marketing of fruit and vegetable crops. 4. Development of leaflets, CDs, films and other material in local language for distribution for popularizing the post harvest management technology in horticultural crops.
E	Livestock Production	Strategies	Proposed Interventions
1	Lack of improved breeds of sheep, goat and cattle	Awareness and training	1. Training on importance of breed improvement. 2. Exposure visit to animal farms rearing improved breed of sheep goats and cattle. 3. Organizing Cattle Fair and rewarding farmers rearing improved breeds. 4. Involving Para-vet services/ NGOs for creating awareness about breed improvement.
2	Inadequate extension and support services for livestock	Capacity building	1. Training unemployed youth in Para-vet services like AI, animal health, nutrition, sanitation, and hygiene. 2. Providing AI kits, relevant literature and other equipment to the Para-vets on cost sharing basis. 3. Development of leaflets, and other extension material in local language for distribution through Para-vets on AI, animal health, nutrition, sanitation, and hygiene.
3	Severe shortage of green fodder and poultry feed	Training and demonstration	1. Training the farmers on cultivation of fodder crops and cattle/poultry feed preparation 2. Demonstration on new fodder crops and improved fodder varieties 3. Training on range land management for green fodder availability. 4. Providing mini-kits of new fodder crops and improved fodder varieties seeds to livestock owners and FIGs. 5. Development of leaflets, and other extension material in local language for distribution through Para-vets on

			cultivation of green fodder and rangeland management.
4	Unorganized marketing in rural areas	Capacity building and group formation	<ol style="list-style-type: none"> 1. Success stories of successful farmers/ groups to be shown to cattle/ herd owners in form of films on their activities for creating awareness. 2. Formation of FIGs on animal rearing and marketing, with the help of local NGOs and other community leaders. 3. Exposure visits to successful areas/ enterprises where group activities on marketing of milk, meat, hide and other animal products are running successfully. 4. Training on group dynamics, record keeping and team management, and marketing skills. 5. Hand holding support for market linkages with milk processing industry, meat packaging industry, leather industry and other such industries which use animal products as a raw material.
5	Scientific knowledge and skill gap among farmers	Training and demonstration	<ol style="list-style-type: none"> 1. Training on scientific management of cattle and herd to farmers and extension personnel. 2. Development of leaflets, and other extension material in local language for distribution through extension functionaries and Para-vets on AI, animal health, nutrition, sanitation, and hygiene.
F	Socio-economic Issues	Strategies	Proposed Interventions
1	Lack of access to credit, and market	Capacity building	<ol style="list-style-type: none"> 1. Formation of commodity based Self Help Groups and Farmer's Interest Groups, on thrift and savings with the help of local NGOs and other community leaders. 2. Training on group dynamics, record keeping and team management, and marketing skills. 3. Exposure visit to successful credit and thrift activities at national/ international level for group leaders/ extension functionaries. 4. Capacity building of SHGs/ FIGs on market-led production, developing market linkages, ITC enabled marketing. 5. Re-establishing the brand Made/ Produced in Afghanistan particularly in areas like dry fruits, animal products, cotton, wool, through professionally managed Brand Building efforts.
2	Low involvement of women in agriculture	Capacity building, Training and exposure	<ol style="list-style-type: none"> 1. Organizing women in to groups for economic activity. 2. Training women for value addition and post harvest technology. 3. Exposure visit of women groups to successful areas where such women groups are working
3	Lack of post harvest, storage and processing facilities in the villages	Training, capacity building, exposure visits and demonstration	<ol style="list-style-type: none"> 1. Trainings on Post harvest management, value addition, storage, processing and packaging of local produce as per market demand. 2. Training on sustainable management of post harvest facilities after hand holding is over. 3. Dovetailing with other agencies which offer such

			<p>facilities to the farmers.</p> <p>4. Establishment of post harvest and storage facilities like seed bank/ grain bank, in selected villages on pilot basis to demonstrate their use and utility.</p> <p>5. Exposure visit to successful sites.</p>
4	Limited knowledge about governmental and non-governmental schemes/ projects.	Awareness	<p>1. Development and distribution of leaflets, and other extension material in local language for distribution through extension functionaries detailing the various governmental/ non-governmental projects/ schemes, their provisions, eligibility etc. for wider circulation.</p> <p>2. Starting of new programmes on radio and TV providing information about various project/ schemes.</p> <p>3. Use of posters, bill boards, sign boards, news papers, and other mass media to create awareness about projects/ schemes and their provisions for farmers and farm women.</p>
G	Institutional issues	Strategies	Proposed Interventions
1	Lack of qualified manpower for research and extension work both at the national and provincial level	Training and capacity building	<p>1. Establishment of high quality training/educational facilities for research and extension functionaries belonging to both public and private sectors, involved in teaching, research and technology transfer for agriculture and allied sectors.</p> <p>2. Provision for in-service issue based short term trainings courses for research and extension workers.</p> <p>3. Providing adequate incentive for good extension workers and those who are willing to upgrade their knowledge and skills.</p> <p>4. Provision for up-gradation of formal educational qualifications of the extension functionaries through state support.</p> <p>5. Provision for Para-extension workers under PPP mode for filling the gaps in manpower needs and availability.</p> <p>6. Providing mobility support and adequate financial provisions for moving in the fields for extension work so that can learn from the field.</p> <p>7. Providing adequate research facilities for addressing issue related to crops/ enterprises under various micro situations.</p> <p>8. Organization of interactive seminars and workshops for sharing information among research and extension workers from different provinces/ districts.</p> <p>9. Provision of visiting Faculty/ Researchers from other countries with similar agro-climatic situation for building the capacity of research and extension workers of the country.</p>

Chapter-V

Innovations and Success Stories

Technological development and transfer through well organized agriculture research and extension organizations are key elements in increasing agricultural productivity and achieving national food security in most nations. In addition, if the current farming systems can be intensified and/or diversified, this technology transfer strategy can increase the incomes of small farm households; thereby, improving rural livelihoods. This approach is well suited in countries that have a well developed agricultural research and extension system. However, in Afghanistan, after two decades of conflict, the agricultural education, research and extension infrastructure is currently weak, so an alternative approach may be more appropriate in increasing farm income.

In most rural communities, there are innovative farmers who have the capacity and insight about how to utilize technical knowledge and market information in developing “innovative” production systems, including the diversification of their farming systems to increase farm income. It is important to recognize that these innovations may not be new in other countries or even in the same province, but they still may be real innovations in a particular community or district. In many cases, these potential innovations, if utilized by similar farm households operating under similar conditions, can be quickly up-scaled by using a *farmer-to-farmer* extension approach as has been successfully carried out in other countries, such as India. Following this extension strategy, it is possible to move more quickly in increasing farm incomes and improving rural livelihoods.

These “innovations” and success stories can be systematically investigated and documented by tracing the forward and backward linkages (i.e. market-to-farm and vice-versa) to determine the potential for these different high-value crops and/or products to be scaled-up in different communities or districts. Across most provinces and districts, there are many farmer-led innovations or success stories that could be implemented across many rural villages within Afghanistan. Many of these success stories are just waiting to be identified, documented and replicated; this is a primary purpose of conducting PRAs in each district and then in translating these findings into a strategic research and extension plan for each district. The purpose is clear; to first identify these success stories and then to determine whether these innovations can be replicated and scaled-up. As documented in the following success stories, some organizations, such as ICARDA, have begun promoting successful innovations on a small scale across different parts of Afghanistan. However, the goal of the AWATT project should be to incorporate this strategy within the national agricultural extension system so that a much larger number of farm households can be reached in increasing farm income and improving rural livelihoods.

To accomplish this goal, it is essential that these success stories be documented through this participatory extension approach, so that the most promising innovations can be rapidly investigated and then scaled up to comparable farm households, who are operating under similar agronomic conditions. The following section outlines five such success stories, which illustrate how these types of innovations might be scaled-up within the target districts, provinces and/or across the country. In addition, from this first phase of PRA training, there is preliminary evidence that many more success stories are waiting to be identified and then scaled-up by implementing a strategic research and extension plan (SREP) for each district, which is the primary purpose of first conducting PRAs across all districts within Afghanistan.

Success Story-1: Mint and Its Value Added Products: Novel Source of Income to Afghan Farmers²

Despite the best efforts and massive international aid, rural communities in Afghanistan are plagued with poverty. Some of the pre-requisites to create viable alternative livelihoods are introduction of easily adaptable alternative crops and income generating activities that could be managed using household labor with minimal requirements of specific machinery and special storage conditions. All efforts to provide alternative livelihoods are to be focused primarily on tapping the huge domestic market with enormous demand for basic to luxury goods. Further, it is not out of place to mention that lack of infra-structure, processing facilities, quality control, investment in industry and infrastructure, and unpredictable security situation, will continue to jeopardize the export possibilities in coming years.



ICARDA through establishment of small rural enterprises has transformed mint from a kitchen garden crop to commercial one; and has increased its income generating potential through simple value addition techniques coupled with increased market access and marketing skills of the rural families. Farmers' associations were organized and members were trained in growing mint using modern agronomical practices and in simple value addition techniques to enhance the marketability of mint and its products. Training and support was provided to attractively pack and market the dried-mint leaves; simple equipment were provided to the associations to manufacture 'Mint-Water' (distillate) as an effective remedy for common digestive ailments; and extract Mint-Oil as a by-product during the production of mint-distillate. It is important to mention that digestion related ailments and sufferings are very common in rural Afghanistan due to unavailability of safe drinking water, poor hygienic conditions, and absence of suitable health

²Source- J. Rizvi, M. Athar, K. Wadan, W. Rasuli, and A. R. Manan
International Center for Agricultural Research in the Dry Areas, Afghanistan Program
<http://www.icarda.cgiar.org/APRP/APRP-AE/HMAP/abstract/rizviABS.htm>

care facilities. Thus, local communities heavily depend on alternative therapies, offering an opportunity to introduce scientifically produced herbal remedies with the potential of generating a good income.



Hygienically produced and attractively packed mint-distillate is now available in the markets of four provinces, and Afghan Ministry of Health has approved its production and marketing. Currently, seven farmers' associations (including one exclusively of woman) established in Helmand, Kabul, Kunduz, and **Nangarhar** are involved in production and marketing of fresh and dried mint; mint-distillate and mint-oil.





Collectively, these associations have produced and sold more than 25,000 packets of dried mint; and 40,000 bottles of mint-distillate in Afghanistan, and have also tested marketing their products in Peshawar (Pakistan).

A comparison of income generated through fresh mint (without value addition) shows a 40 % higher income over opium poppy cultivation; marketing of mint-distillate and dried mint fetches a profit of 50-130 and 250 %, respectively. Newly introduced value addition techniques not only provide much needed off-farm income and employment opportunities while reducing human sufferings, these also contribute towards the Government of Afghanistan's over all strategy to reduce poppy cultivation.

Success Story-2: Empowerment of farmers through Village-based Seed Enterprises in Nangarhar Province, Afghanistan³

Under the Eastern Afghanistan Alternative Livelihoods Program (ALP-E), USAID has provided funding through Development Alternatives Inc to improve Afghan agriculture and increase the incomes of rural households. Work focuses on three components: adaptive research, technology transfer through demonstration, and village-based seed enterprises. Project implementation has begun, particularly on adaptive research and demonstrations since late 2005 in three target provinces of Kunar, Laghman and Nangarhar.

The seed component of the project aims at establishing 12 new village-based seed enterprises (VBSEs) in these provinces over the next two years. It will also support five existing VBSEs in

³ Source:

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Nangarhar, established under the USAID-funded RAMP project. The project has already established six new VBSEs in the three provinces, which have begun wheat seed multiplication. The VBSEs are responsible for seed production and marketing within and beyond their communities. At the end of the project each VBSE will produce and commercialize quality seed in a sustainable manner.

ICARDA has established 17 Village-based Seed Enterprises (VBSEs) in three provinces in Eastern Afghanistan: Kunar, Laghman and Nangarhar through RAMP and ADP/E programs of USAID. Almost all VBSEs are engaged in seed production and marketing of wheat, rice and mung bean. In addition to providing equipment (tractors, seed cleaners) and inputs, ICARDA has trained VBSE members in production, processing and marketing seeds of staple crops like wheat, rice, mung bean and potato. During the 2006/07 season, the VBSEs produced over 900 tons of wheat seed and are multiplying seed of rice and mung bean.



The ALP organized the Jalalabad Ag-Fair 2007 on 4-5 September 2007. In 2008, the 17 VBSEs have collectively planted 669 ha and expected to produce about 2500 tonnes of wheat, rice, mung bean and potato seed for marketing. The Nangarhar Seed Company, an umbrella organization representing VBSEs in Nangarhar province, and established with ICARDA support, participated. It exhibited its high-quality seed and the seed cleaner and treater provided by ALP/ICARDA. The company's stall won a 'Special Prize for Innovation' at the Ag-Fair. ICARDA's work in organizing, supporting, and transforming VBSEs into sustainable enterprises has been acclaimed by visiting dignitaries. ICARDA also exhibited its achievements in adaptive research and technology transfer through demonstrations; and in a stall set up by ICARDA-organized Mint Producers Associations.

However, lack of centrally located proper storage facilities remained a major constraint for VBSEs. ICARDA negotiated with Afghanistan Small and Medium Enterprise Development to provide support for constructing a seed storage facility. Behsoud VBSE was the first beneficiary

where the storage facility was constructed on land provided by one of its members. The model storage facility (15 m x 10 m x 5 m) at a cost of around \$13,000 has the capacity of more than 200 MT. The facility will help in maintaining seed quality and seed marketing. Each VBSE will require such facility for its promotion and seed marketing purposes.

Farmers were very satisfied with the support provided by MAIL, ADP-E and ICARDA particularly in adaptive research, technology transfer and seed provisions through VBSEs and are committed to increase agricultural production and productivity in the face of global challenges in food security.

Success Story-3: Afghan Farmers producing under contract - Farmer groups sign production contracts; the first of its kind in Afghanistan⁴

Until recently, market risk was a ubiquitous characteristic of agricultural activities in Afghanistan. Most farmers would plant their crops hoping to find a market at harvest, which often resulted in substantial losses due to spoilage and opportunistic practices of rural traders. On the other side of the chain, produce wholesalers were uncertain about the volumes and quality of products that would be available at harvest time, which prevented them from projecting sales.

USAID's Alternative Development Program for the Eastern Region (ADP/E) is introducing a series of innovations to increase the capacity of local farmers to produce more fruit and vegetables, improve quality and streamline market systems. However, these interventions needed to be complemented through the introduction of market incentives and by reducing exposure to market risk. In June 2007 USAID's (ADP/E) initiated the facilitation of forward contracts between farmer groups and members of the Jalalabad Fruit and vegetable Wholesalers Association.



Abadullah Bathsha Fruit and vegetable farmer, Behsud, Nangarhar, Afghanistan

⁴ Source- www.dai.com/pdf/Afghan_Farmers.pdf

The first auction for 110 MT of vegetables took place in February 2007, which increased to 364 MT in the fall of the same year. In the spring of 2008 over 2,300 farmers will have sales contracts before sowing their fields as part of an initiative to link farmer groups with traders and animal feed companies; this initiative will result in sales of over 6,000mt valued at US\$1.2 million.

With USAID's assistance, participating farmers receive fair market prices for their harvest this year through the introduction of *written* sales contracts. In addition to the introduction of certainty in market operations, over 30,000 farmers have now access to quality inputs and technical assistance to increase productivity, improve product quality and market their produce more efficiently. USAID's ADP/E follows a Value Chain Approach, integrating men and women entrepreneurs from the Eastern region in the production and marketing of high-value crops and linking them to the local, regional and global value chains.

Success Story-4: Innovation in Rice Cultivation- SRI Technology in Afghanistan⁵



The system of rice intensification known as SRI – also as *le Système de Riziculture Intensive* in French and *la Sistema Intensivo de Cultivo Arroceros** (SICA) in Spanish -- is a methodology for

⁵ <http://ciifad.cornell.edu/SRI/afgPMISpres0907.pdf>
<http://ciifad.cornell.edu/SRI/listservs/sriupdate0308.html#Afghanistan16>
<http://ciifad.cornell.edu/sri/countries/afghanistan/index.html>

increasing the productivity of irrigated rice cultivation by changing the management of plants, soil, water and nutrients. SRI practices lead to healthier, more productive soil and plants by supporting greater root growth and by nurturing the abundance and diversity of soil organisms. The agro-ecological principles that contribute to SRI effectiveness have good scientific bases. SRI concepts and methods have been successfully adapted to upland unirrigated rice, and they are now being extrapolated to other crops like millet, wheat and sugar cane.

SRI *does not require* the purchase of new seeds or the use of new high-yielding varieties. Although the highest yields with SRI have been obtained from improved varieties, most traditional or local varieties of rice respond well to SRI practices and command a higher market price. And while chemical fertilizer and agrochemicals can be applied with SRI, their use is not required as organic materials (compost, manure or any decomposed vegetation) can give good or even better results at low cost. Farmers report that when SRI methods are used correctly, rice plants are better able to resist damage from pests and diseases, reducing or eliminating need for agrochemical protection.

Because plant populations are greatly reduced with SRI, seed costs are cut by 80-90%, and because paddy fields are not kept continuously flooded, there are water savings of 25 to 50%, a major benefit in many places. However, cessation of flooding means that increased weeding is required. If this is done with soil-aerating implements like a rotating hoe, this cost has a benefit of enhanced crop production.

SRI *does require* skillful management of the factors of production and, at least initially, more labor, particularly for careful transplanting and for weeding. Since yield increases are usually 50 to 100%, and possibly several times present levels, the returns to labor can be very great. The profitability of rice production can be greatly increased when yield goes up with a reduction in the costs of production. As farmers gain skill and confidence in SRI methods, their labor input in fact decreases, and over time SRI can even become labor saving compared with conventional rice-growing methods.

SRI is a work in progress, with improvements continually being made, including better implements and techniques that further reduce labor requirements. Farmers are encouraged to make their own improvements in SRI methods and to share experience within the farming community. Yield is the most evident (and controversial) feature of SRI, but many other considerations are also driving its spread around the world. SRI can be made use of in Afghanistan as this country has great need for improving its food security without relying on external inputs

SRI Introduced in Afghanistan

The Aga Khan Foundation program operating in the north of the country first introduced SRI technology in Afghanistan in year 2007 in Baghlan and Takhar provinces. With support from the Aga Khan Foundation, SRI expert from India, P. Kishan Rao, trained farmers in Baghlan Province who have started demo-trials in three locations. Weeding emerged as the most significant difficulty; however, weed problems were handled by combining manual and mechanical weeding. Neighboring farmers who were skeptical about transplanting such tiny seedlings are now impressed by plant growth. The number of tillers at 42 days after transplanting

has reached 48 in some SRI plants. The plant growth achieved was impressive – as many as 120 tillers per plant at 96 days – but transplanting was done too late to capitalize upon the crops’ potential given the short growing season there. AKF has organized visits and training for dozens of farmers involved in its programs and for others working with the German NGO, Agro-Action. SRI was introduced by the project in 2007 as part of its food security strategy with particular attention to efficient use and management of water by the farmers. While the initial efforts were not completely successful, one of the farmers got a yield of 490 kg from 500 sq.m. area (9.8 tons per hectare), which is considered a good achievement for a SRI beginner. A Cornell PhD student Mark Henning has also introduced SRI to an NGO, namely Joint Development Associates International, working around Mazar-e-Sharif in the north which is trying to up-scale it.

Success Story-5: Off-Season Mint production for greater profits.

Considering the prolonged winter season in Afghanistan, and also the scope for increasing the supply of fresh vegetable and mint during the seasons of scarcity, and to get better prices for their produce during off-season, local farmers with help from ICARDA, have started growing off-season vegetable in several provinces of Afghanistan including Nangarhar province.



Many farmers felt that they could not produce enough mint and vegetables to take advantage of the demand situation in the local as well as national market during winter season, although they could grow good quality vegetables round the year provided they had the appropriate technology like farmers in other countries. Most of the high value vegetables like mint, tomatoes, ridge guard, bitter guard, bottle guard, and snake guard can be produced in a plastic tunnel.

Mint is a high value medicinal and aromatic plant, newly introduced by ICARDA, Afghanistan in Nangarhar province of Afghanistan. The success story of mint cultivation is being replicated also in other provinces of Afghanistan by group approach and also its processing and marketing by the farmer association. It is interesting to mention that in Kabul an association of women started mint processing and its marketing.



Mint is a crop cultivated during summer season. The growth and development of mint plant starts retarded and stunted during winter season. But at the same time the price of mint products goes up during winter season due to its market demand and supply phenomena.

With the technical support of ICARDA, Afghanistan, Md. Ashaq , President of Mint Farmer – cum- Processor Association , Kale Bakhtan, Surkhod ,Nangarhar, Afghanistan experimented cultivation of mint during winter season under poly tunnel condition. Under 1000 m² poly-tunnel area, he successfully cultivated mint and processed in his processing plant and earned more than 40,000 Afghani (\$800) in the winter season, when mint is usually not cultivated.. For his mint product he is getting an order not only from Afghanistan market but also from abroad specially Saudi and Middle East.

The success story of mint cultivation under poly-tunnel during winter season is gaining a perfect case for replication and slowly more and more farmers are approaching ICARDA for help. Not only mint but the farmers are also replicating this experience for high value off- season vegetable cultivation in nearby area and fetching good income.

Proposed Strategy for Up-Scaling the Innovations related to High Value Crops

Conducting a PRA to Assess Local Conditions and Potential Markets

In order to identify what marketable crops might successfully be introduced into the study area, local conditions are assessed using various Participatory Rural Appraisal (PRA) techniques. However, most farmers are unaware of the commercial importance of these HV crops, making it necessary to conduct extension activities, such as exposure visits, to create farmer awareness about these potential economic opportunities.

In addition, farmers are to be informed both about the need to conserve the biodiversity of these plants as well as the growing demand for these HV crop in national and international markets. In the process, farmers should be told about the economic importance of these crops as a viable alternative to the traditional food crops being produced in the district/ province. As a result of these extension activities, farmers will soon become receptive to the idea of cultivating these new high value crops.

After discussion among the research and extension workers who jointly carry out the PRA, it should be seen that there is an agreement on the HV crop to be introduced/ up-scaled becomes a part of their strategy. Also to be kept in mind is that even small and marginal farmers could successfully engage in cultivation of these crops. If a Strategic Plan for Research and Extension has been developed for the district, such crops should find a place in the diversification strategy and should be given priority within the Strategic Research and Extension Plan (SREP) for the district.

Organizing Producers into Farmer Interest Groups and Farmer Associations

Given the need to scale-up for the production of different high-value crops or products, it is necessary to identify those specific crops that have a strong market demand and that can be profitably grown by small-scale farmers in the district with minimal risk, at the same time, Extension officers should start organizing the farmers into Farmers Interest Groups or FIGs. If adequate capacity to organize the farmers in to commodity based groups is not available with the Department, it is advisable to seek help from NGOs and other such organization which have some past experience in this area.

Organizing these groups is a challenge due to different social and economic issues, and it is difficult to bring all of these different social and economic groups together into one organization to carry out a common economic activity. Therefore, the strategy to be adopted should be to organize these FIGs around people from similar social and economic backgrounds, who share similar goals and objectives. A typical (village-level) FIG could have 15 to 20 farmers as members and, those village-level FIGs should share a common interest, such as the production and marketing of the specific high value crop. The village level FIGs may be federated at district level into a Farmers Association (FA) and these FAs, in turn, could eventually become federated at the provincial level into Farm Federations (FFs).

The key in setting up these producer groups at the village, district and province level is to create the framework that could produce a substantial quantity of specific high value crops on a sustainable basis, thus making it economically viable for the buyer or the company to continuing

sourcing the material from the same groups of farmers. In addition, a substantial farmer base that could be mobilized to produce specific HV crops to specification would be highly beneficial in negotiating future contracts and in securing good financial returns for its members. It should be understood that even small and marginal farmers could participate in cultivation of HV crops if they followed the group

Approach as this was necessary to create economies of scale in production and marketing operation, which as individual farmers it was difficult to achieve.

Assessing the Market Demand for Specific High Value (HV) crops

In order to successfully produce HV crops in the district, it is necessary to identify those crops where there was a stable and growing market for the product. The identification of potential markets proved to be a difficult task, since most pharmaceutical companies engage in an inefficient, secretive and somewhat opportunistic process of sourcing medicinal plants. As a result, the trade in MAPs has been largely unregulated and carried out through a plethora of small-scale traders. To find genuine buyers and to determine the demand for these crops, several public agencies working in this field were contacted. In addition, the Internet was used to identify companies who are manufacturing traditional drugs. However, the initial interaction with most buyers did not prove to be encouraging, since most merchants were not interested in entering into a long-term contract, and the amount of raw materials needed depended on market demand for their products.

Next, a more systematic and intensive effort should be undertaken by the extension officers to investigate the market demand for specific HV crops. Securing a credible market is essential to the success of this activity. Once the buyers/companies are short-listed in efforts should be made to develop a partnership between the growers and the company so that successful supply chains can be established with each firm.

Training FIG members to Produce and Handle HVCs

The FIGs should be trained to produce and handle these different HVCs efficiently and the training these interested members from the FIGs has to be carried out by a team of experts from that field they may include: teachers and scientists from Faculties of Agriculture and research institutions; some NGO which has the requisite expertise and if need be the experts may be brought from neighboring country where such HVCs are being grown. The local Research Station should be the other key organization in this process, since they would be required to carry out field research on the production technologies that appeared most suitable for the district and validate it under the local conditions. The field where these adaptive trials are being carried out, and could become a key demonstration and training site; for future groups of farmers who wish to under production of these HVCs.

Technical publications are to be prepared in the local language that explains cultivation practices so that these extension materials can enhance farmer's learning. Care should be taken to explain the economics of producing and marketing HVCs. The selection of trainees is to be done in consultation with the Head man of the village, local NGOs and progressive farmers of the area. To augment capacity building among each FIG, efforts should be made to select farmers who were more responsive to adopting new cultivation techniques. These selected farmers can then act as resource persons within each FIG to provide technical support to the other members.

Initially, the inputs such as seeds, fertilizers, organic manures and plant protection measures should be provided by the Extension Department on a cost sharing basis, later they can procure them from the open market themselves.

Monitoring the Production and Post-Harvest Handling of HVC⁶

The production of the HV crops has to be carefully monitored by both Extension and Research officials to ensure that they were producing as per the requirements of the buyers/ company. If possible the visits by the representatives from the purchasing company may also be organized periodically to ensure that proper package of practices were being followed by the participating FIGs. After harvest, the HV crop should be handled as per the buyer's specifications and needs. Quality tests if needed will then be performed on the samples taken from each lot. The representatives from Extension and Research should be present at each stage of this process to ensure that the terms of the contract were carefully adhered to by the FIGs and the buyer/ company.

⁶ For detailed information on Market-led Extension see:

- a. Singh, K.M., Swanson, B.E. & Singh, J.P. 2005. *Development of supply chains for medicinal plants: a case study involving the production of vinca rosa by small farmers in the Patna District of Bihar India*. Paper presented at the Post-IAMA Workshop on Building New Partnerships in the Global Food Chain, June 2005, Chicago, IL.
- b. Singh, K.M. 2004. Successful cultivation and processing of aromatic plants. In *Setting paradigms: an anthology of success stories*. Innovations in Technology Dissemination (ITD) Component of the National Agricultural Technology Project (NATP).
- c. Singh, J.P., Swanson, B.E. & Singh, K.M. 2006. Developing a decentralized, market-driven extension system in India: The ATMA model. In A.W. van den Ban and R.K. Samanta, eds. *Changing roles of agricultural extension in Asian nations*, pp. 203–223. Delhi, B.R. Publishing.

Detailed Time Table and Learning Aims in Balkh and Nangarhar**Day-1**

Time	Particulars
08.00 AM	Registration of the Master Trainees
09.00 AM	General Session- AWATT project and Technology Transfer Strategies
10.00 AM	General Session- Transforming agricultural extension system from supply driven to market driven, introduction to the Strategic planning and SREP
11.30 AM	Tea break
12.00 Noon	General Session- Understanding Agro-climatic Zone(ACZ) and Agro-Ecological Situation (AES), selection of pilot districts.
01.30 PM	Lunch
02.30 PM	Group work- Identification of major AES in selected districts
04.00 PM	General Session- Presentation and finalization of AES
05.00 PM	General Session- Criteria for village selection and AES Teams for each AES
06.00 PM	Day review and close

Learning Aims:

- To understand about the AWATT strategy
- To create awareness about market-driven extension model
- To understand about Agro-climatic zones and Agro-Ecological Situations and its delineation within a district.

Day-2

Time	Particulars
08.00 AM	Re-cap and introduction of day 2
08.30 AM	Group work- Identification of representative village and corresponding teams
09.30 AM	General session- Finalization of representative villages and AES Teams
10.30 AM	General session-Introduction to Farming System Approach
11.00 AM	Group work- Identification of Existing Farming Systems (EFS), tea on run
12.00 Noon	General session-Presentation of EFS and inputs
01.00 PM	General session- Introduction to Farming Situations
01.30 PM	Lunch break
02.30 PM	Group work- Identification of Farming Situations in Existing Farming Systems (EFS)
03.30 PM	General session-Presentation of Farming Situations and input from Facilitators
04.30 PM	General session- Introduction to information needed for SREP
06.00 PM	Day review and close

Learning Aims:

- To select representative villages and formation of AES Teams
- To understand the Existing Farming Systems and Farming Situations
- To learn about the information needed for preparing the SREP

Day- 3

Time	Particulars
08.00 AM	Re-cap and introduction of day 3
08.30 AM	Group work- Review of secondary data formats
10.30 AM	General session- Presentation on secondary data formats and clarification by the Facilitators and finalization.
11.30 AM	Tea break
12.00 Noon	Group work- Review of primary data formats
01.30 PM	Lunch break
02.30 PM	General session- Presentation on primary data formats and clarification by the Facilitators and finalization
04.30 PM	General session- Introduction to Participatory Rural Appraisal (PRA)
06.00 PM	Day review and close

Learning Aims:

- To understand about the secondary data formats and the sources for obtaining district level information
- To understand about the primary data formats and the sources for obtaining this information
- To create awareness about the Participatory Rural Appraisal (PRA) and its role in collecting information for SREP preparation

Day-4

Time	Particulars
08.00 AM	Re-cap and introduction of day 4
08.30 AM	General session- Space related PRA tools
10.30 AM	Group work- Transect map, tea on run
12.00 Noon	General session- Presentation on transect map, discussion, clarification and input from the Facilitators
01.30 PM	Lunch break
02.30 PM	General session- Time related PRA tools, Matrix Ranking (MR)
03.30 PM	General session- PRA tools, Semi Structured Interview (SSI) and Focused Group Discussion (FGD)
04.30 PM	General session- SWOT and Gap Analysis
06.00 PM	Day review and close

Learning Aims:

- To understand about the relevant PRA tools required for collection of primary information to be used in SREP preparation
- To get practical training on the relevant PRA tools required for collection of primary information to be used in SREP preparation
- To understand about the analytical tools like SWOT and Gap Analysis and their use in SREP.

Day-5

Field work 08.00 AM to 06.00 PM- Testing of PRA tools and formats for data collection and analysis.

Learning Aims:

- Hands-on experience on PRA tools and formats used for primary data collection in real field situation

Day-6

Time	Particulars
08.00 AM	Re-cap and introduction of day 6
08.30 AM	Presentation of filed results, discussion, clarification and input from the Facilitators
01.30 PM	Lunch break
02.30 PM	General session- Introduction to Strategy formulation and Chapterization in SREP
03.30 PM	Group work- Strategy formulation
04.30 PM	General session- Presentation on strategies identified and Chapterization by the groups
06.00 PM	Day review and close of Training

Learning Aims:

- To make the Trainees capable to diagnose the Farming Situations,
- To make the Trainees capable of independently identify the issues, formulate relevant strategies
- To make them well versed with the process of SREP preparation independently.

List of Participants if Master Trainer Training Programme in Balkh and Nangarhar Provinces of Afghanistan

List of the Participants in Balkh Province

S.No.	Name	Department	Contact No.
1	Abdul Razaq	AI-Livestock, Dehdadi	0799881729
2	Mohammad Rafiq	Extn.Chorgul dist	0799483246
3	Abdul Hannan		
4	Ruhul Amin		
5	Mohammad Mustafa		
6	Toghral	Beekeeping, Dehdadi	0799493059
7	Ghulam Nabi	Extension, Nahrishahi dist	078152388
8	Ziauddin	Pl. Protection, Marmal dist	0774061364
9	Jangi Baig	Karakul dept, Dehdadi dist.	0795921795
10	Mohammad Jawd	Extension, Sholgar dist.	0795116698
11	Nazibullah		
12	Abdul Gafoor Khan		
13	Rahim Khan Rahimi	Faculty of Agric. Balkh Univ.	0799416070
14	Sayed Nabi/Wali		
15	Haji Turyaali	Soil Science, Dehdahi Farm	0700536268
16	Ghulam Hyder		
17	Mohammad Nabi		
18	Mohammad Sami		
19	Abdul Zahir		
20	Naqibullah		
21	Abdul Wahab Khan		
22	Mohammad Ishaq		
23	Sepatullah		
24	Ziauddin		

List of the Participants in Nangarhar Province

S.No.	Name	Department	Contact No.
1	Haji Masal Khan	Extension, Chaparhar	0799-406039
2	Zabih ullah	Extension, Behsood	0700-609502
3	Humayoon	Extension, Kama	0700-644742
4	M.Ibraheem	Plant Protection, Battikot	0700-004218
5	Abudl Waheed	Extension, Khugiani	0700620920,
6	M.Zarif Khan	Extension, Kuz kunar	0700-631800
7	Engr.M.Shoaib	Extension, Sarkhrod	0700-699012
8	M.Naseem	Extension, Rodat	0774-320961
9	Engr.Najeebullah	Researcher, Pacher gam	0700-411824

10	Hijratullah	Extension, Gushta	0779-017187
11	Hashmatullah	Extension	0700-637644
12	Abdul Aziz	Extension, Dareenoor	0700-611452
13	Engr.Hameedullah	Extension, Mohamandaara	0775-426167
14	M.Nasir	Extension	0799-355777
15	Abdul Shakoor	Extension, Nazan	0774-187975
16	Ghulam Mohyuddin	Forestry, Koz kunar	0700-638170
17	Abdul Wasi	Researcher , Sorkhord	0799-577412
18	Abdul Waris Tand	Extension, Chapar Har	0707-363334
19	Abdul Waris	Researcher, Nizan	0773410718
20	M.Tofiq	Extension, Archan	0775-366253
21	Habib Raheem	University Teacher	0700-609610
22	Noor Ali Noor	University Teacher	0786-643477
23	Hashmatullah	University Student(Ext.)	0773926653
24	Abdul Nasir	University Student(Agro)	0707-602426
25	Abdullah Waheedi	Federal Representative- Extension,	0799-183817

Training Design and Process of using PRA Tools

Task: To develop Master Trainers for preparation of Strategic Research & Extension Plan (SREP) for identifying intervention points under Technology Transfer component of AWATT project using PRA methodology in selected pilot districts of Balkh and Nangarhar provinces of Afghanistan

Purpose: To train the participants for undertaking PRA for identifying strategic issues confronting agricultural development in pilot districts using various tools and techniques for preparation of SREP in Balkh and Nangarhar provinces of Afghanistan.

Methodology: The following methods/techniques were used to train the participants

- Experiential/ Inductive method of learning
- Working in groups
- Doing neutral tasks
- Sharing in general session
- Highly participatory mode

Course staff expectations:

- Strive for high quality results and learning
- Must participate in this course with an open mind
- Focused discussion
- Time management
- Prepare to experiment and try-out different practices and approaches in order to get things done effectively

Course structure:

Day	Forenoon	Afternoon
Day-1	1. Registration of the Trainees 2. AWATT Technology Transfer strategies- Goal, purpose, approach, structure, role & responsibilities.	SREP, methodology for establishing Research-Extension-Farmer-Market linkages: An over view and experiences to match with AWATT technology transfer strategies
Day-2	Process of SREP development: 1. Agro-climatic region (ACR)- 2. Agro Climatic/ Ecological Zone 3. Identification of Agro-ecological situation (AES) with participants help: -District maps -AES wise maps -Area -Percentage -Specific character	1. Identification of AES in selected districts- Selection of representative villages and Criteria of selection -Truly representative of AES -Availability of different farming systems -Diversity of enterprises -Acceptability -Cooperation 2. Formation of AES Teams - Multi-disciplinary- Agriculture, Livestock, Horticulture, Research, NGOs, progressive farmers, input suppliers etc. - 4-6 members team

Day-3	1. Identification of Farming Systems (FS) 2. Identification of Existing Farming Situations (EFS) 3. Introduction to Farming Situation Based Extension (FSBE)	1. Introduction to information/ data collection 2. Review and finalization of secondary data formats
Day -4	1. Primary data to be collected from representative villages using PRA tools 2. Review of primary data formats and its finalization	Relevant PRA tools needed for SREP and its application
Day-5	Analysis of data, SWOT and Gap analysis	1. Identification of strategies 2. Formulation of activities- scheduling and budgeting
Day-6	Field testing of primary data collection and analysis through application of PRA tools	
Day-7	1. Presentation of field results, discussion and clarification 2. Chapterization of SREP	

Process of handling different PRA Tools

Process of conducting SSI:

- It is important to understand the very semi-structured nature of interviewing the people. It is not structured as it is in questioner method of interview or it is not at all unstructured as most of the NGOs do in their day to day practice.
- It is semi-structured in nature due to three reasons i.e. pre-deciding the subject or topic of interview, knowing the subject in little detail and lastly framing few questions related to the topic to only start the process of interview.
- Team management is very important for distribution of work within the team i.e. the role of interviewer, recorder and observer.
- This is an informal way of interview so care must be taken for behavioral & attitudinal part of the team members. Place, time, seating arrangement, etc must be taken care at the time of interview.
- Start the interview in informal way. Clarify the purpose of interview and come to the main topic.
- It has been found that the villagers are also observing the team members while interview is going on. If it has been observed that the team members are not very interested then the quality of information will be distorted. It is very important to show the interest as if the team members are learning from the villagers.
- Some time it may be possible to verify or clarify some information provided by the villagers. The team may mark that information to be verified in some other time or by other persons.
- It is also observed that when the interview is being carried out for longer period say 20-30 minutes the process needs some lighter atmosphere building. The team must take an opportunity to change the topic and discuss some other day to day life story and then come to the main topic of investigation.
- When the team feels that the sufficient information has been collected give last minute chance to the participating villagers to add some thing more if they want.

- Recap the main points of interview to the villagers so that it can be understood well.
- Review the information within the PRA team, write the report and present it at the proper place.

Process of Transect Mapping:

- After resource mapping or a feel of the village situation prepare the PRA team for a transect walk of the entire village revenue area
- It is a direct observation tool of PRA. So, observation means seeing, hearing, talking, feeling, smelling or tasting, etc, may be required to observe the entire village situation specific to agriculture.
- Take a group of local people along with the walk, it is must.
- Explain the purpose of transect to the people and involve them in the process of transect walk
- Go along with the people and observe the surroundings. Make notes of the observed things
- Ask questions to clarify things you are not clear about to the local people accompanying you. Listen carefully to what they say. Also listen to the discussion they have among themselves. Encourage them to explain as you move.
- If necessary, stop at certain location for detail discussion on the point emerging.
- After returning draw a transect map on the large sheet of paper .The basic idea of cross-section is on the basis of topography of the land. It has been observed in the entire village, these ecological situations are their local names.
- Let the local people take lead in drawing a transect.
- Use your notes and the notes of other members of the transect team, while making the diagram me.
- These zones can be compared on various observed parameters like land type, soil types, water resources, crops, vegetables, fruits, flowers, animals, sheep, goat, bird, fish, bee keeping, aromatic and medicinal plants, their problems, opportunities, success stories, etc.
- Showing the transect map to the villagers and take their views along with clarifying the doubts.
- Thank the participants for their active participation.

Process of Social Mapping:

- Fix the location of the exercise in consultation of the village people and invite them for it.
- Take care of the behavior and attitude (B&A) part of the PRA team members.
- Explain the purpose of the exercise to the villagers and start the process in an informal manner.
- Request them to start drawing the map on the ground in a bigger size. If they hesitate, you can help them to start by drawing some prominent physical feature and quickly” hand over the stick to them.” Use local material in drawing the map.
- Your role is only to facilitate the process and not to draw the map. Incur age people to participate in the process. Involve the villagers in drawing the map.
- Once the map is prepared ask them to number the households.

- Interview the map with probing and open questions on the aspect as required and provided in the check list. It is very important to interview the map and collect the information otherwise whole process will be defeated.
- Watch the process alertly. Listen to the discussion carefully. Take notes in as much details as possible.
- Copy the map on a large sheet of paper and also take photograph if possible.
- Thanks the villagers at the end of the process.

Process of Resource Mapping:

The process of making a resource map is same as mentioned in the social map. Social and resource map can be drawn separately or it can be prepared on the same map base on the need and situation.

Process of Well-being Ranking:

- The process of well-being ranking specific to know the types of land holding has been done through using card sorting method.
- A list of household has been prepared in informal talking mode.
- Write the name of the head of the households on a small card- one household per card.
- Explain the purpose of the exercise to the villagers. Since it is a little sensitive issue care must be taken in handling this tool.
- This tool can be played in open space and with the sufficient number of villagers. It will give correct picture about the purpose of investigation.
- Ask them to rank the card on the basis of land holding as required in the check list. Let the villagers to do the ranking on their own. Confirm the order of the ranked cards whether is has been arranged in descending or ascending order. Facilitate the discussion among the villagers.
- Review the category of the compiled cards more than one times till it is confirmed by the villagers said as o.k.
- Understand the types of land holding according to the different category of the cards and their criteria.
- Note down the number and name of the head of the households falling under each category. Add the necessary basic details on each household card. These cards may also be used for understanding assets, occupation, involved in different farming systems, situations, etc.

Process of Trend Analysis:

- Identify the older people in the village who are in a position to talk and also in a position to give the information.
- Respect the older people to whom you are talking. Explain the purpose of your talk and listen carefully the story of the village regarding the area, production and productivity of different commodities
- Try to understand the trend or significant change with its reasoning
- Also understand the present status of different commodities in the village through talking with the young farmers. It can also be visualized in the village through using different PRA tools.

- Finding a significant change and its cause by probing some key questions like major trends & findings, cause of the trend, what can be done, who can play a role in it, what can the farmers can do themselves, what can they do with little assistance from outside, etc. for the discussion may lead to find out some intervention.
- Thanks the older people participating in the discussion for their active involvement and time.

Check list and data formats-for information to be collected from selected Villages:

Name of village:

District:

Province:

Purpose:

- Understanding of the people
- Understanding of the resources
- Understanding of infrastructure and other facilities
- Understanding Farming System, Farming Situation, and Enterprises
- Understanding problems, and needs
- Searching issues and implementable interventions

Data/ information needed:

Understanding of the people

- **Population:** Male, Female, Children, Literacy, percentage of Male and Female, number of households, number of farm families, number of landless, Shepherds, artisans etc. Job availability to village population (employment rate), ethnic structure, income level, people affected by natural calamities (Secondary data from village Headman and/or Social Map).

Demographic Information of the village

S.No.	Name of the village	Numbers
	No. of households	
	Total Population	
	Male	
	Female	
	Children	
	% of literacy	
	No. of Workers	
	Agricultural	
	Non-agricultural	
	Landless	
	Shepherds	
	Artisans	
	Any other	

- **Number of Farm Households:** Size group wise information on land holdings in the village – Small, Marginal, Large, landless, tenancy status (Source-Headman or Wealth ranking based on landholding).

Information on operational land holdings

S.No.	Land holding category	Operational holding (number and area)	
		No. of holding	Area
	Very large		
	Large		
	Medium		
	Small		
	Marginal		
	Landless		

Type of tenancy

S.No.	Type of tenant	Number	% of total farmers
	Owner		
	Owner-cum-tenant		
	Tenant		

Understanding of the resources

- **Geographical Area:** Cultivable area, Land under cultivation, Rainfed area, Area under forest, Pasture/range land, Current fallows, De-graded lands, Problematic lands, Common lands, etc. in hectares. (PRA tool - Resource Map/ Semi Structured Interview)

Information on Land use pattern

Particulars	Area in Hectare	Percentage (%)
Geographical Area		
Cultivable area		
Land under cultivation		
Irrigated area		
Rainfed area		
Area under forest		
Current fallows		
Degraded land (desert/ unusable land)		
Problematic lands		
Common land		
Orchards		
Others		

Information about Forests, pasture, spring, rivers, minerals and mountains

Particulars	Name/number	Area in Hectare	Uses / benefits to village	Remarks
Forest				
Pastures				
Range lands				
Springs				
River				
Mountain				
Minerals				

- **Rainfed and Irrigated Area:** Area and percentage under each category, sources of irrigation with area and percentage in respect of each source; Well irrigation (ha); Tube wells (ha); Lift Irrigation (ha), Tank Irrigation (ha), Canal Irrigation (ha), River irrigation (ha), irrigation project near completion and potential area covered, etc. (source-Resource Map/SSI)

Rainfed and Irrigated Area

S.No.	Category	Area (Ha.)	Percentage
	Well irrigation		
	Tube well		
	Lift irrigation		
	Tank irrigation		
	Canal irrigation		
	River irrigation		
	Rainfed area		

Information about irrigation project

S.No.	Type of project and name	Completed/ nearing completion	Area irrigated / projected to be irrigated (Ha.)
	Major		
	Medium		
	Minor		

- **Land and soil:** Land utilization statistics (area and percentage) soils, their problems and their distribution with maps. (Source- Transect/SSI)

Information on Soil for the village

S.No.	Type of soil	Area (ha.)	Percentage
	Black		
	Red soil		
	Sandy soil		
	Sandy loam		
	Other		

Understanding Farming System, Farming Situation, and Enterprises

- **Farming Systems:** Predominant Existing Farming Systems with combination of enterprises (Source- Transect/ SSI)

Information about the farming systems

S.No.	Existing farming system	No. & % of families associated	
		Number	Percentage

- **Major enterprises and their farming situations:** enterprises like agriculture, horticulture, animal husbandry, etc. and their farming situation. (Source- Transect/ Resource Map/ Seasonality chart/ SSI)

Major enterprises and their farming situations

S.No.	Type of enterprises/ commodities	Specific Farming situation
	Agricultural crops	
	Irrigated	
	-	
	Rainfed	
	-	

	Horticultural crops Orchards Vegetables Floriculture	
	Animal husbandry Cows Buffalo Sheep Goat	
	Fisheries	
	Sericulture	
	Poultry	
	Bee Keeping	
	Any other	

- **Production and productivity under each enterprise:** Area, Production and productivity trend of different commodities under each enterprise. Cost of cultivation and production for various crops and other enterprises.

Commodity/ Enterprise		1980	1985	1990	2000	2005	2008
Agriculture	Area						
	Production						
	Productivity						
Horticulture	Area						
	Production						
	Productivity						
Livestock	Number						
	Production						
	Productivity						

Gap in Adoption and Proposed Extension Strategy for Improving the Productivity / Income from Agricultural Crops

Name of the crop-----

SN	Items of package	Existing practice	Recommended practice	Gap in adoption (F/P/N) (*)	Specific reasons for the gap	Farmer proposed extension strategy
01	Average Yield (Q / ha.) - Grain - Fodder					
02	Cost of Cultivation					
03	Varieties					
04	Sowing : - Time - Method					
05	Seed rate (per ha.)					
06	Seed treatment					
	Organic manure (tons /ha)					
07	Fertilizer / nutrient (kg/ha) - Basal (N+P+K) - Top dress (M+)					
08	Total					

09	Method of fertilizer use : - Basal - Top dress					
10	Micro nutrient (specify) : - Dose (kg/ha) - Method of application					
11	Pest management - -					
12	Disease management - -					
13	Post harvest management					
14	Weed management - Mechanical - Herbicide					
15	Water management : - Number of irrigations - Method of irrigation					
16	Land management : - Salinity/ acidity - Water logging					
17	Method of harvesting					
	Any other					

(*) F = Full

P = Partial

N = Nil

Gap in Adoption and Proposed Extension Strategy for Improving the Productivity / Income from Horticultural Crop

Name of the horticultural crop-----

S No.	Items of package	Existing practice	Recommended practice	Gap in adoption (F/P/N) (*)	Specific reasons for the gap	Farmer proposed Extension Strategy
01	Average Yield (T / ha.)					
02	Cost of Cultivation					
03	Variety					
04	Spacing (mts)					
05	Manure (kg/plant)					
06	Major nutrients : (N+P+K) - Dose (Kg/plant) - Method of application					
07	Micro-nutrient () - Dose (kg/plant) - Method of application					
08	Weed management - Around the plants - In between the rows					
09	Pest management - -					
10	Disease management - -					
11	Water management					

	- No. of irrigations - Method of irrigation					
12	Special practices - Training - Pruning					
13	Harvesting - Method - Time (hour)					
14	Farm level processing - Grading - Packing - Processing - Storage (months)					
15	Marketing - Location of market - Distance from farm - Mode of transport - Marketing by individual or group - Any other					

(*) F = Full

P = Partial

N = Nil

Gap in Adoption and Proposed Extension Strategy for Improving the Productivity/Income of Milk and Meat Animals

Type of animal _____

S No	Items of the package	Existing practice	Recommended practice	Gap in adoption (F/P/N) (*)	Reasons for gap in adoption	Farmer Proposed extension strategy
1	Average yield or income					
2	Cost of rearing					
3	Breed up-gradation : * Artificial insemination: - Breed - Location * Natural insemination : - Breed - Location					
4	Feed management (per animal) - Green fodder (Kg/day) - Dry fodder (Kg/day) - Concentrates (gms/day) - Minerals (gms / day) - Vitamins (ml. / day)					
5.	Inter calving period (months)					
6.	Health care (per year) (+) - HSBQ (No. of vaccinations) - FMD - Rinder pest - Mastitis - Thilaris - Others					
	General management : - Washing (times / day)					

- Cleaning (times / day)					
- Housing (Paccca / Kutchra)					
- Drinking water (lts. / day)					

(*) **F = Full**

P = Partial

N = Nil

(+) Write only for those diseases which are relevant for the village / situation. Strike out the rest

Gap in Adoption and Proposed Extension Strategy for Improving the Productivity/Income Commercial Production and Rearing of Fish

Name or type of Fish _____

S.No	Item of package	Existing practice	Recommended practice	Gap in adoption (F/P/N)*	Reason for gap in adoption	Proposed extension strategy
1	Average yield (ton / ha)					
2	Cost of production					
3	Culture components					
	(a) Indian Major carp					
	(b) Exotic carp					
	(c) Prawn					
	(d) Cat fish					
4	Pond preparation					
	(a) Organic manure (kg/ha)					
	(b) In organic manure (kg/ha)					
	(c) Biofertiliser (kg/ha)					
	(d) Lime (kg /ha)					
	(e) Water depth					
5	Weed control					
	(a) Manuring					
	(b) Mechanical					
	(c) Chemical					
6	Stocking size / No.					
	(a) Spawn					
	(b) fry					
	(c) Fingerlings					
7	Feeding schedule					
	(a) Rice bran					
	(b) Oil cake					
	(c) Green leaf					
8	Sample netting					
	- Monthly					
	- Quarterly					
	- Half yearly					
9	Aeration					

10	Disease					
11	Harvesting method					
12	Culture method					

(* **F = Full** **P = Partial** **N = Nil**)

- **Documentation of Innovations, Success Stories and Indigenous Technical Knowledge (ITK)**- Innovations, success stories and ITK related to any of the enterprises/commodities must be documented

Documentation of a Success Story/Innovation/ITK

- Title of the Case
- Background Setting
- Intervention and Process
- Outcome Benefits and Impact
- Lessons Drawn/ Inferences Drawn
- Possibility of Replication and Future Implications

Understanding of infrastructure and other facilities

- **Infrastructure Facilities:** Facilities inside and out side the village that caters to the produce of the village (number, location, capacity built-in and utilized etc) in respect of each commodity. (Source-PRA)

Infrastructure facilities within & outside the village catering to villager needs

S. No.	Name of processing unit/facility	Number	Location	Capacity	
				Built –In	Utilized
1	Custom hiring facility				
2	Seed company				
3	Machinery supplier				
4	Communication facilities				
5	Veterinary clinics				
6	Processing facilities				
a	Flour mill				
b	Oil mill				
c	Rice mill				
d	Any other				
7	Road length				
8	Electricity availability				

- **Information on markets:** local, district, regional and national markets that serve the village in respect of crops, fruits and vegetables, livestock and livestock products sericulture and fisheries etc along with quantity of commodities handled. (Source-SSI)

Table: Information on commodities and markets

S. No.	Commodity	Location	Level	Quantity	Price at which traded (Af/qtls)

- **Storage facilities:** Commodity wise, with number, location, capacity, tariff, etc available in the village or nearby, that serve the village. (Source-SSI, Facility map)

Table-Storage facilities

S. No.	Commodity stored	Location	Capacity		Price charged (Af/qtls)
			Built in	Utilized	

- **Agricultural credit:** From banks, cooperatives, informal credit sources etc with break up and volume. (Source-SSI, Venn diagram)

Table-Information about credit facilities

S. No.	Name of Bank/ Financial Institution	Location	Agricultural credit extended	Rate of interest charged	Recovery rate

- **Input and Service Facilities:** Facilities available inside and also out side the village that cater to the needs of the village, in respect of different land based enterprises. Custom hiring input providers, Para-technical services. (Source-SSI/ Facility Map/Venn diagram)

Table- Input and Service Facilities

S. No.	Name of facility	Type of service provided	Location	Terms of business	Charges

- **Farmers' groups and organizations:** Number, purpose, structure, activities undertaken, membership (norms and type), linkages with other organizations, sources of income etc. (Source-SSI/Venn diagram)

Name of Farmer Group/ Producer Organization	Purpose of formation	Location	Source of income	Structure	Membership (Norms &type)	Linkages with other organizations

- **Private sector organizations and non-governmental organization:** Organizations engaged in development, extension and research activities in respect of various land based enterprises, with nature of activity, spread target groups, membership etc. (Source-SSI/ Venn diagram)

Table-Information on Private sector organizations and non-governmental organization

Name of Organization	Location	Type of activities performed	Sources of finance	Linkages with other organizations

○ **Summarization of Issues/ Problems related to different enterprises**

Enterprise / Commodity	Issues/Problems	Proposed farmer's strategy	Proposed extension strategy, if any	Issues for research
Agriculture				
Horticulture				
Animal Husbandry				
Fisheries				
Forestry				
Sericulture				
Bee keeping				
Mushroom				
Other activities				
Water Management				
Marketing				
Post harvest management				

Observations of the PRA Team:

Background Information on Afghanistan

General Background⁷

Afghanistan's pre-war economy was mainly based on agriculture and livestock production; an estimated 85% of the population was living in rural areas and the bulk of the labor force was engaged in agriculture and the processing of agricultural and livestock products. Despite its difficult terrain, adverse climatic conditions and limited arable land, Afghanistan was largely self-sufficient in food and a significant exporter of agricultural products, particularly horticultural products.

Since then, Afghanistan has been devastated by years of war and civil strife and a debilitating five year drought which has resulted in the collapse of the agricultural sector and that has devastated the country's food production capacity. Compared to the pre-war situation, Afghanistan now has one of the lowest levels of per capita food availability in the world.

The collapse of this productive agricultural base has also resulted in lack of employment opportunities in agriculturally related activities. Large and increasing numbers of people have lost their livelihoods. A serious consequence of the conflicts in Afghanistan is the widespread destruction of family life; many women have been widowed or have lost the male members of their household, and therefore many rural households are headed by women, leading to an increasing feminization of agriculture.

The country will require substantial humanitarian, rehabilitation and reconstruction assistance over a long period to regain its food security and reduce poverty. Rehabilitation of agricultural productive capacity will be fundamental to any recovery.

Geography and Land Use⁸

Afghanistan has a total of 647,500 sq km of land area, and reportedly 248,187 ha of water bodies (2,482 sq km, some 1.0% of total land area). Its area is composed of mountainous and desert areas where the Iranian Plateau borders the mountains of Central Asia. The Hindu Kush mountain range splits Afghanistan from east to west. The steep high peaks of the Wakhan Corridor are in the east, at 5,500-7,500 meters altitude. In the east-central and central part, the mountains broaden into wide spurs fanning to the north and south at 3,000-4,000 meters elevation. In the west, the mountains end in the Safed Koh Range, north of Herat and close to the northwestern border, where the altitude is around 1,100 meters.

⁷ Allan T. Kelly, 2003, "Rebuilding Afghanistan's Agriculture Sector" Asian Development Bank, South Asia Department. P.40.

⁸ Bill Gregg, (2002) Afghanistan seed and crop improvement situation assessment April-may, 2002, ICARDA, p-53

Climate

The climate is arid to semi-arid, with cold winters and hot summers, a continental climate of extreme temperatures. Annual rainfall ranges from 100 mm to 400 mm. Accumulated winter snow from the high mountains sustains agriculture. The changing conditions down the snow-fed river valleys create agricultural conditions and thus cropping possibilities. In their upper reaches, valleys are steep, rivers fast-flowing and the valley floors are narrow. Winters are cold, but summers are mild with short but abundant growing conditions. Lower down, as they move out of the foothills, the valley floors broaden into flat plains with slow-flowing rivers. Here, winters are milder and summers hotter, and the growing seasons are longer.

Status of Agricultural Sector⁹

The agricultural sector has suffered from varying degrees of depredation for almost 25 years. A combination of war, civil conflict, exploitation, and enforced neglect have combined to leave a legacy of degraded natural resources, especially forests and rangeland; damaged infrastructure; and fragmented rural institutions. While non-government organizations (NGOs) and United Nations agencies have worked effectively with rural communities throughout this period and have had positive impacts at the local level, overall the sector continues to perform poorly, and the country depends heavily upon food aid. The recent severe drought has worsened the degradation, but it is not the key underlying factor for the non-sustainable resource use, poor management, and inefficient production systems. The task of recovery is to improve the performance of the sector and at the same time rebuild its resilience, through the adoption of technologies that reduce vulnerability to drought. Although population pressures are increasing, Afghanistan has the capacity to mobilize over 7.5 million hectares (Mha) of cultivated land, of which 60% would be irrigated and 20% would be double-cropped.

This degree of land and water use amounts to about 0.35 ha per capita, a relatively generous ratio in a regional context. In addition, the country has about 29 Mha of rangeland for use by livestock. If productivity can be restored to levels similar to those of the rest of the region, then Afghanistan should be able to resolve medium- to longer term food security concerns.

As determined by the mountain system described above, Afghanistan is usually divided into 4 geographic regions: (1) Northern plains, (2) Central mountains, (3) Eastern and Southeastern hills and foothills, and (4) Southern and Western lowlands. Only some 12% of Afghanistan's land is arable. Use of Afghanistan's land is: arable land: 12%; permanent crops: 0%; permanent pastures: 46%; forests and woodland: 3%; other: 39% (1993 est.). Irrigated land is 30,000 sq km (1993 est.).

Most of the country has an arid to semi-arid climate with rainfall ranging from 100 to 400 mm. The climate is typically continental with temperatures varying from -10⁰C in winter to 34⁰ C in summer. Precipitation is erratic and often occurs as violent storms. Over half the

⁹FAO/WFP (2003). *Crop and Food Supply Assessment Mission to Afghanistan, a Special Report*, FAO/WFP, Rome. See <http://www.fao.org/gIEWS>.
Maletta, Hector (2002a). *Crop and Food Supply Assessment Survey 2002: A statistical report*. FAO, Kabul.

Maletta, Hector (2002b). *Wages of war, wages of peace: Food prices and unskilled labour pay in Afghanistan, 1996-2002*. FAO, Kabul.

country receives less than 300 mm of rain /snow. About half the annual precipitation occurs in winter (between January and March), except for the southeastern mountains, which catch the western edge of the summer monsoon. Most precipitation falls as snow in the central mountains. About 30% precipitation falls as rain in the spring between April and June.

Agro-ecological zones¹⁰

Topography is the factor of greatest influence in agriculture, and results in an extreme diversity of agriculture. Major agro-ecological production zones have been categorized differently; a useful classification is shown in the complete report. There are, however, many areas of many different conditions. One person said that effective cropping involves many valleys, all of them with a different set of conditions.

However, the identification and delimitation of agro-ecological zones in Afghanistan is rather difficult. The country has a very varied geography, with literally thousands of micro-climates and micro-watersheds, and frequently conditions change from one valley to the next, within a fairly short distance. The main instrument for analyzing agro-ecological zones is the Afghanistan Land Cover Atlas, prepared by FAO, published in 1999 but based on satellite and ground information dating from 1990-93. As land use has somewhat changed over the intervening years, and normally varies from one year to the next according to rainfall and climatic conditions, even that very significant work has some drawbacks. FAO is now preparing to update the Land Cover Atlas, using recent satellite imagery and ground data, but no such update is available at the moment on a general basis.

Only a small part of Afghanistan's land (12% of the country), mostly in scattered valleys, is suitable for farming, and most of this requires irrigation. However, less than 1/3 of the arable land is irrigated, primarily due to water shortage. Water from springs and rivers is distributed through surface ditches and underground channels.

Agro-ecological zones and watersheds are the most significant criteria for zoning if the purpose is surveying agriculture. Agriculture is possible only in specific patches or strips of land in the numerous mountain valleys and the thousands of micro-watersheds created by numberless streams coming down from the mountain ranges. More or less contiguous and relatively extensive agricultural areas only exist in some parts of the territory (such as the Turkistan Plains or the Northern Foothills) where flat or gently undulating land prevails, but even there the actual conditions of the terrain and the capricious nature of water supply impose at the best of times only a patchwork of cultivable and uncultivable land rather than a continuous pattern of cultivation. Thus the zones may be considered to break down into a number of specific agricultural areas located in different provinces and districts, belonging to different watersheds and existing at different elevations. These zones reflect basic ecological properties of land and climate, plus some supplementary criteria about accessibility and prevailing agricultural activity.

The map at Figure 1 shows these zones in the form of whole districts aggregations. This shows which districts have been assigned to each zone, not the actual extent of the agro-ecological

¹⁰ Maletta, Hector & Favre, Raphy. 2003, "Agriculture and Food Production in Post-War Afghanistan-A Report on the Winter Agricultural Survey".FAO.309P

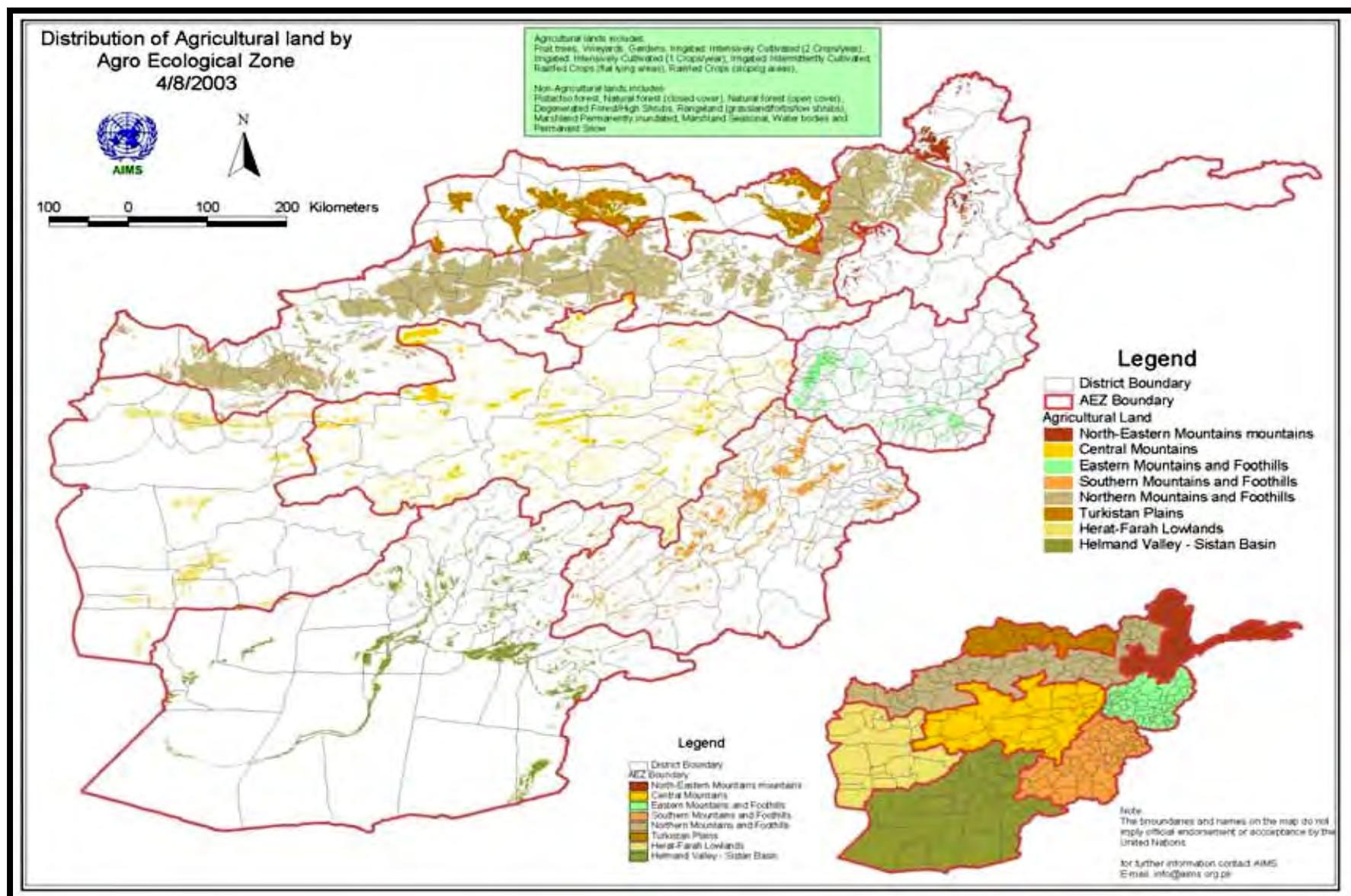
conditions relevant to each zone; In fact, arable land is only a fraction of each zone's territory. Figure 1 shows main classes of land cover in each agro-ecological zone.

These local variants of the zones have their own agricultural specificity, and thus conclusions about one of the broad agro-ecological zones are not meant as an exact description of every local variant, but as an average for a certain type of terrain on which certain kinds of agriculture prevail.

Based on climate and land Afghanistan has been divided in to eight Agro Climatic Zones (Fig-1):

- Zone-I Badakhashan Mountains,
- Zone-II Central Mountains
- Zone-III Eastern Mountains,
- Zone-IV Southern Mountains
- Zone-V Northern Mountains,
- Zone-VI Turkistan Plains
- Zone-VII Heart-Farah Low lands,
- Zone-VIII Helmund River Valley

Figure- 1: Agro-Ecological Zones in Afghanistan



Irrigated/Rainfed areas

Some reports indicate that only 8 million hectares (m.ha) of Afghanistan's 63 million ha, are arable. Arable land is scattered throughout the country mostly in valleys along rivers and other water sources. Nearly 50% of the arable land is irrigated in some manner, $\frac{3}{4}$ of it located north of the Hindu Kush Mountains. Pre-1978 figures indicate that some 77% of all wheat and 85% of all food and industrial crops come from irrigated lands.

Some 2.5 million ha are irrigated annually (FAO). Total irrigable area is about 5.3 m.ha, of which half is irrigated each year, while the other half lies fallow. Only 1.4 m.ha of irrigated land had sufficient water throughout the year to allow double cropping. Another 1.4 million ha is cultivated as rainfed land, so some 4 million ha of land were cultivated annually before 1978 by some 1.2 million farm families (Trutmann). Currently, a large part (est. 30% up) of the irrigation systems have been damaged or destroyed by the war. Because of abandonment, neglect and lack of maintenance, another 15-20% of the land area is probably not in sufficient condition to support further agricultural development. Actual irrigated land probably amounts to about 1.2-1.3 m.ha, and is decreasing every year. (USDA, reported by Trutmann).

Watersheds

Since rivers play such an important role in determining land use, another important criterion to classify the territory from the point of view of agriculture is watersheds. The thousands of streams coming down from the Hindu Kush define a large number of watersheds comprising five major basins or (more correctly) river systems. Only one of the river systems (the so-called Indus basin dominated by the Kabul River) goes ultimately to the Indian Ocean by way of the Indus River. All the other systems drain into the deserts and arid plains around Afghanistan, with no sea outlet.

River basins in Afghanistan

River basin	Area (%)	Water (%)	Rivers
Amu Darya	14	57	Amu Darya, Panj, Wakhan, Kunduz, Kokcha
Hari Rod-Murghab	12	4	Hari Rod, Murghab, Koshk
Helmand	41	11	Helmand, Arghandab, Tarnak, Ghazni, Farah, Khash
Kabul (Indus)	11	26	Kabul, Konar, Panjshir, Ghorband, Alinigar, Logar
Northern	11	2	Balkh, Sar-i-Pul, Khulm
Non-drainage area	10		

Each major river system is further composed of several specific watersheds and a total of 27 meso-watersheds are identified within the five major river systems.

Farming Systems

Agricultural production is basically small holdings with irrigated cropping, supplemented by livestock. Cropping intensity depends on availability of irrigation water and the length

of the growing season. Crop rotation is well-understood by farmers. As possible, legumes, animal manure, and chemical fertilizers are used. Sloane lists 7 farming systems which represent a combination of agro-ecological zones and the factors which limit production. These apply to 95% of irrigated and 85% of rainfed agriculture. In these areas, agriculture consists of small pockets in an arid landscape. Also not covered are the nomadic livestock people (Kutchi) who make up some 7-10% of the population, and are the principal users of the semi-arid lands.

Important Crops

A wide variety of crops are grown in Afghanistan, however, wheat, the primary staple crop, is grown in all areas. Tree fruits (apricot, almond, walnut, mulberry, etc.) and grapes are found everywhere.

Wheat: 90% is fall-planted and 10% is spring-planted. Some 80% of all production comes from irrigated lands, with only 20% from rainfed production. The greater area is irrigated, and seeding rates are higher under irrigation.

Barley: Some 80% is spring-planted, with 20% fall-planted as varieties are less cold tolerant. Also, varieties are early-maturing, some 25 days before wheat harvest, and suffer more bird damage.

Vegetables: Some 6% of the irrigated area is in vegetables, grown both for family consumption and sale of excess as a cash crop. Melon, watermelon, onion, potato, and tomato cover 90% of the vegetable area. Some spices, such as cumin, are grown.

Fruits: Cover 10% of the irrigated area. Grapes, almond, apricot, pomegranate and apple occupy some 87% of this area. Mulberry and walnut are primary fruit crops, normally grown along boundaries, roads, etc. Fruits are used by the family, and sold as a cash crop.

Planning regions

Along this report, data are reported for agro-ecological zones and also for the UN planning regions. These are groupings of provinces that make no agro-ecological sense, but as they are commonly used it was thought convenient to present the results also in this fashion. The composition of the regions is as follows:

UN Planning Regions in Afghanistan

Region	Provinces
North	<i>Balkh</i> , Faryab, Jauzjan, Samangan , Sar-i-Pul
Northeast	Badakhshan, Baghlan, Kunduz, Takhar
West	Herat, Farah, Baghdis
West-Central	Ghor, Bamyan
Central	Kabul, Parwan, Kapisa, Logar, Wardak
South	Paktika, Paktya, Khost, Ghazni
East	<i>Nangarhar</i> , Laghman, Kunar, Nuristan
Southwest	Nimroz, Helmand, Kandahar, Zabul, Uruzgan

Governmental Administration

There are 34 provinces: Badakhshan, Badghis, Baghlan, Balkh, Bamian, Farah, Faryab, Ghazni, Ghowr, Helmand, Herat, Jowzjan, Kabul, Kandahar, Kapisa, Konar, Kondoz, Laghman, Lowgar, Nangarhar, Nimruz, Oruzgan, Paktia, Paktika, Parvan, Samangan,

Sar-e Pol, Takhar, Wardak, Zabol, Nurestan (Nuristan), Khosht, Panjsher, and Daikundi, . Within each province are subsidiary Districts. Within these, most rural families live in villages.

The central government had an organizational structure of Ministries for each important area. These included Ministries of Agriculture, Irrigation and Livestock; Rural Development; Public Health; Women Affairs; Higher Education; Water and Power; Commerce; Education; Mines and Industries; Pilgrimage (Haj); Light Industries; Interior Affairs; Defense; Civil Aviation and Tourism; Information and Culture; Reconstruction; Urban Development; Transport; Public Works; Justice; Martyrs and Disables; Telecommunication; Foreign Affairs; Border Affairs; Refugees; Planning; Finance; Irrigation. Another Cabinet-level agency was the General Directorate of Intelligence.

Population Characteristics

Total population (July 2001 est.) was 26,813,057, composed approximately as: 0-14 years of age: 42.2% (male 5,775,921; female 5,538,836) 15-64 years: 55.01% (male 7,644,242; female 7,106,568) 65 years and over: 2.79% (male 394,444; female 353,046) (2001 est.) Average lifespan has been reported as: total population 46.24 years; male 46.97 years; female 45.47 years (2001 est.). Another estimate of lifespan was 41 years. UNDP (2000) put life expectancy at 40 years. Population growth rate is 3.48% (2001 est.), reflecting the continued return of refugees from Iran. Fertility rate, as related to family size, is 5.79 children born/woman (2001 est.). Ethnic groups: Pashtun 38% of the population, Tajik 25%, Hazara 19%, minor ethnic groups (Aimaks, Turkmen, Baloch, and others) 12%, Uzbek 6%.

Religions: Sunni Muslim 84% of the population, Shi'a Muslim 15%, other 1%.

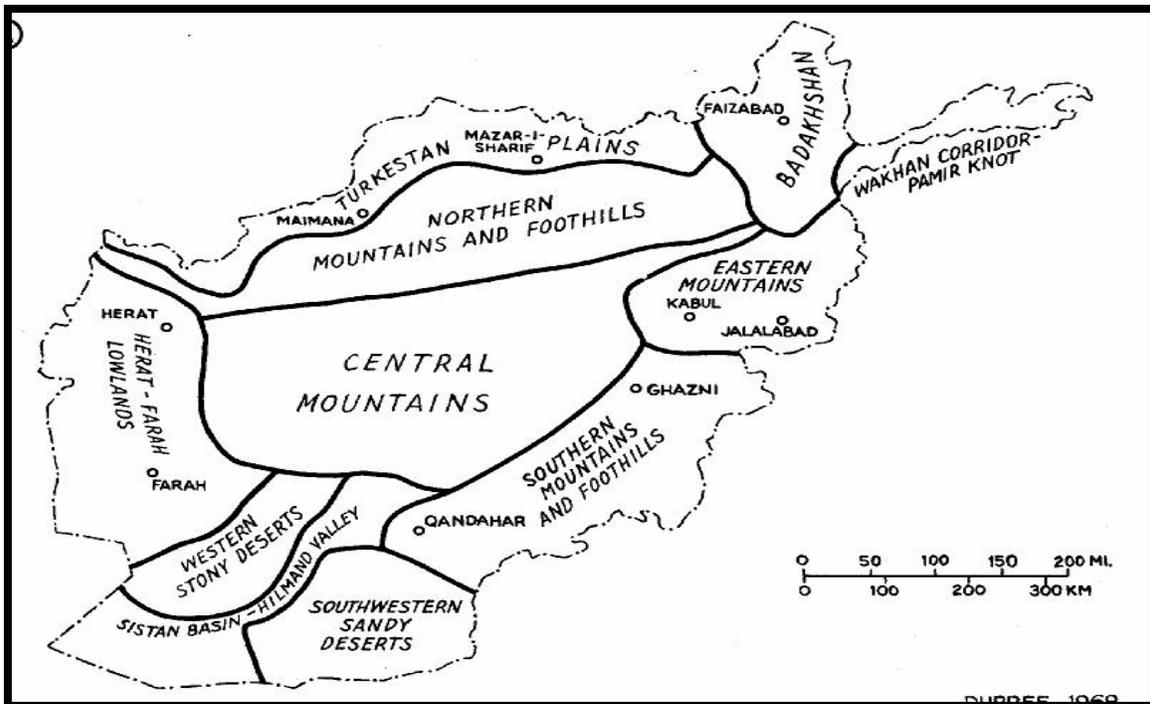
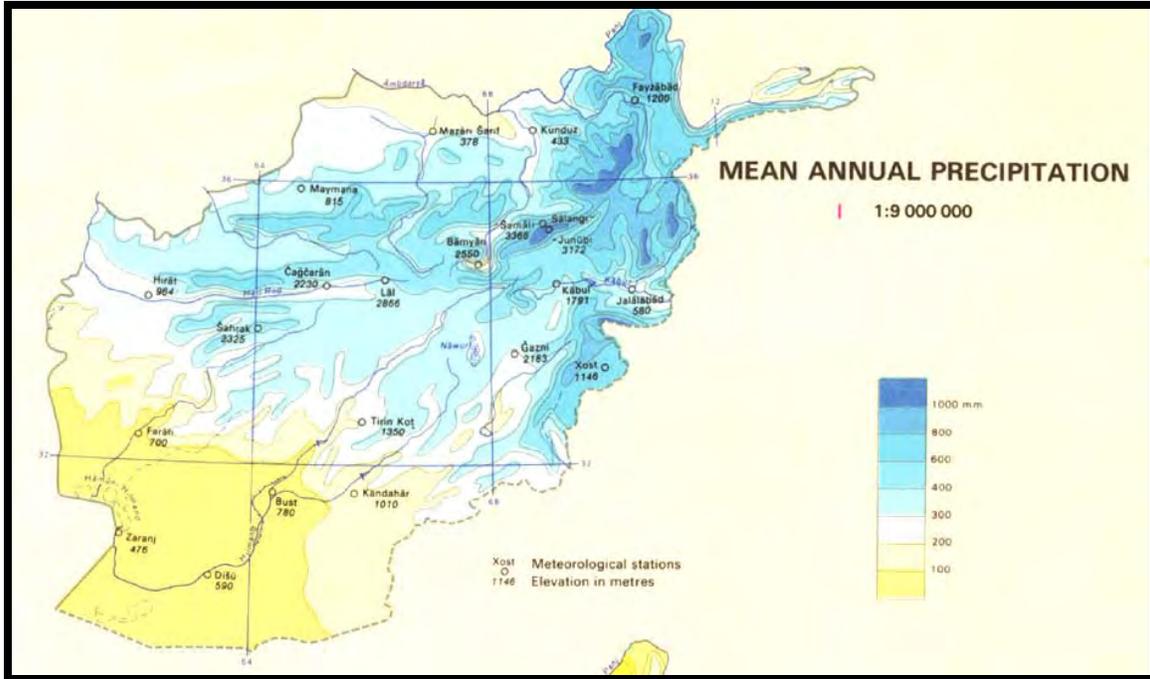
Rural and Urban Populations

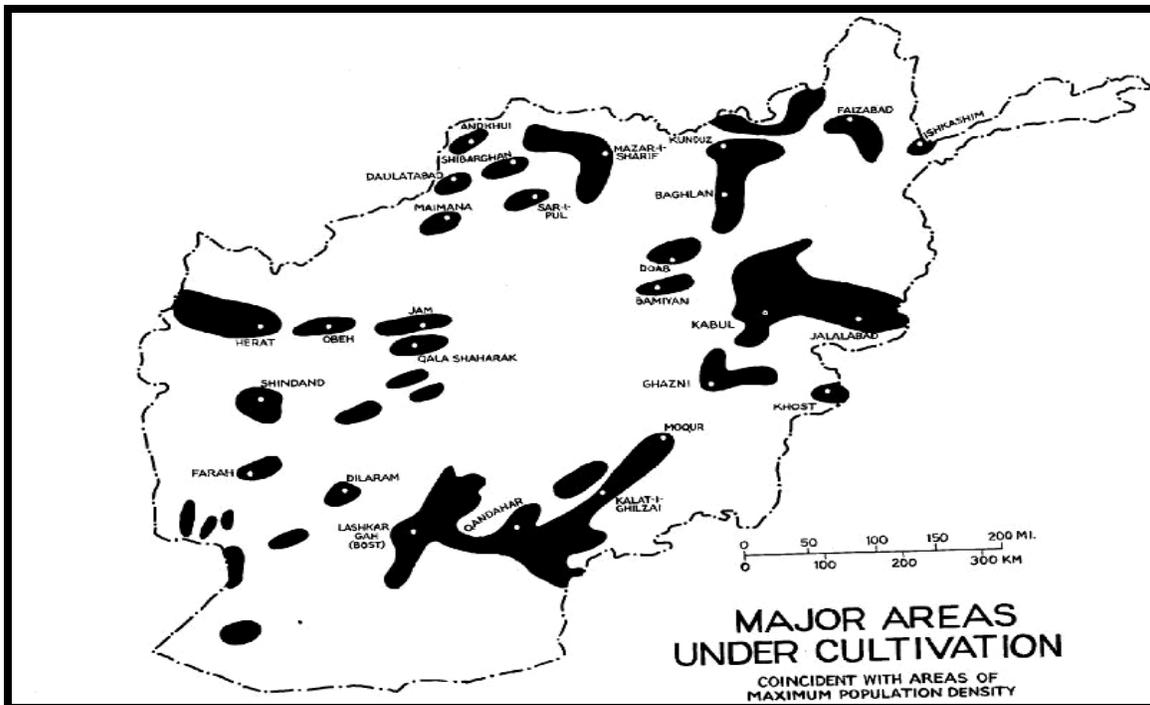
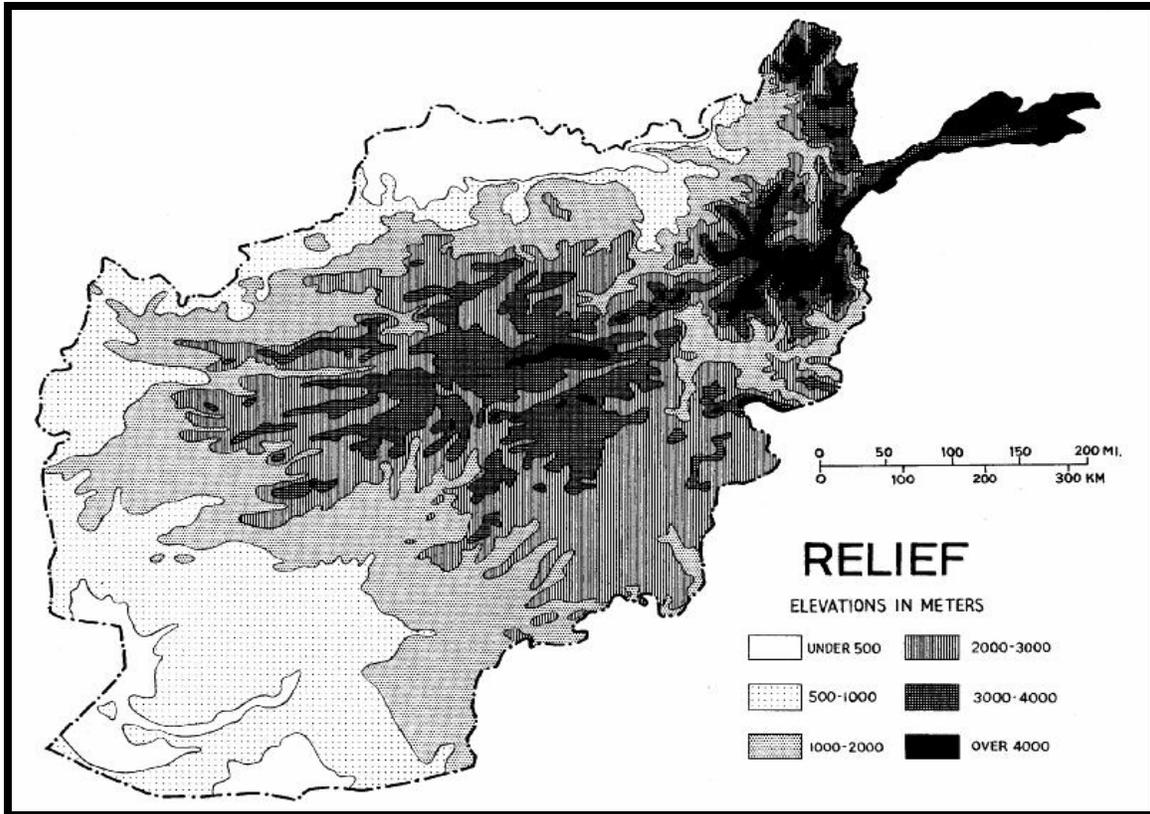
Identification of rural districts, settlements and communities is far from perfect. The existing listings of villages are not complete. The geographical coordinates of many settlements are not known or are imprecise, making mapping difficult. No precise definition of a "village" actually exists, and thus two similar and neighboring settlements may be variously described as one or two villages, or even as three or more if each mosque in the area is considered as a separate village centre. No account exists at the moment of the *manteqas* that are the real units of ethnic or residential identity in rural Afghanistan, often comprising many villages in the same area within a given district (or sometimes straddling two districts). Villages and even districts are constantly splitting as people claim to have separate identity as a settlement or area.

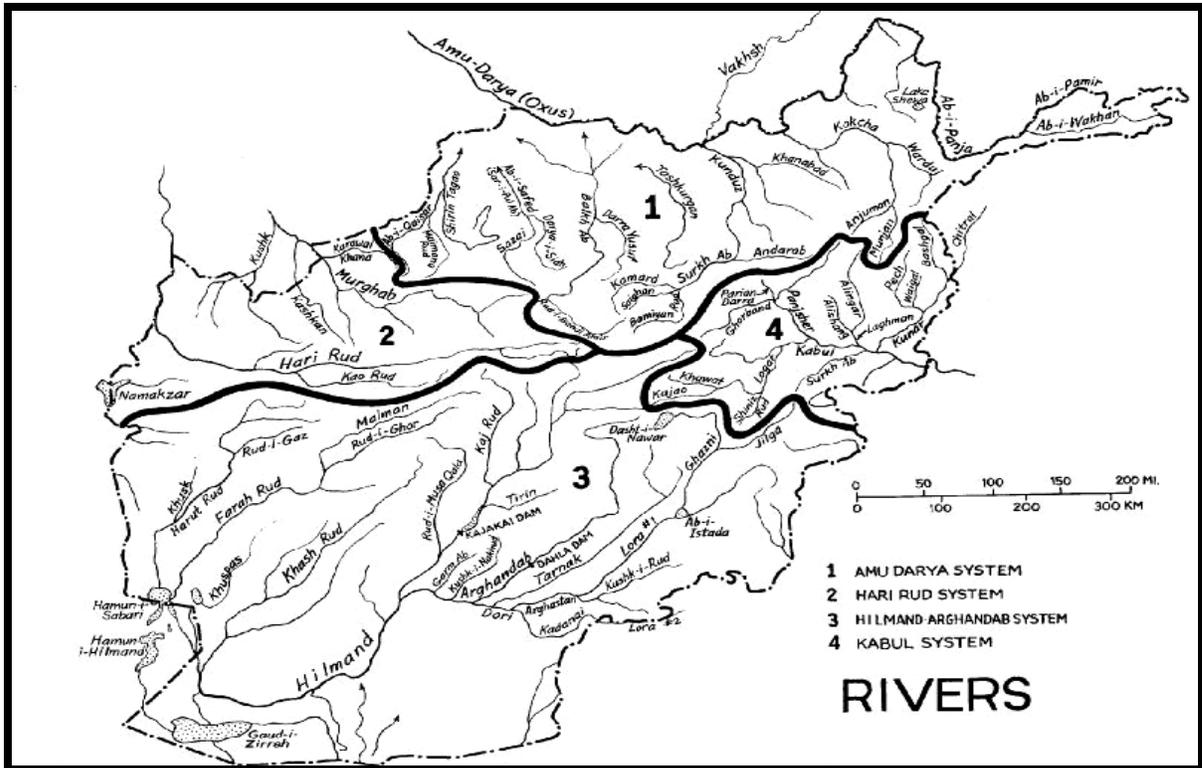
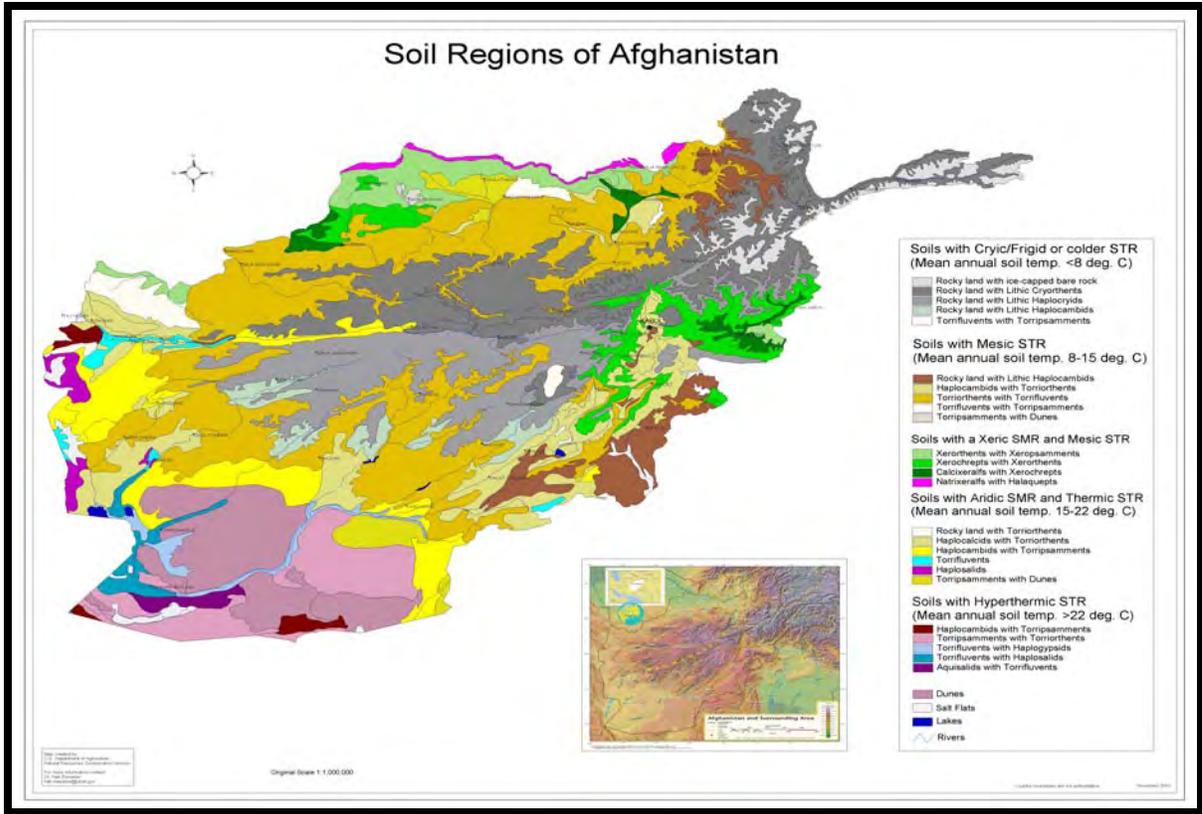
Before the recent conflict/refugee situation, rural households reportedly made up 80% of the total national population, with only 20% urban. Major urban provinces are Kabul (79% of its population is urban); Kandhar (35% urban); Mazar-e-Sharif (26% urban); Herat (24% urban) and Kunduz (21% urban). These provinces make up 33% of the total national population, but over 80% of the urban population. The nine provinces with the most rural population make up 17% of the national population, but have virtually no urban population.

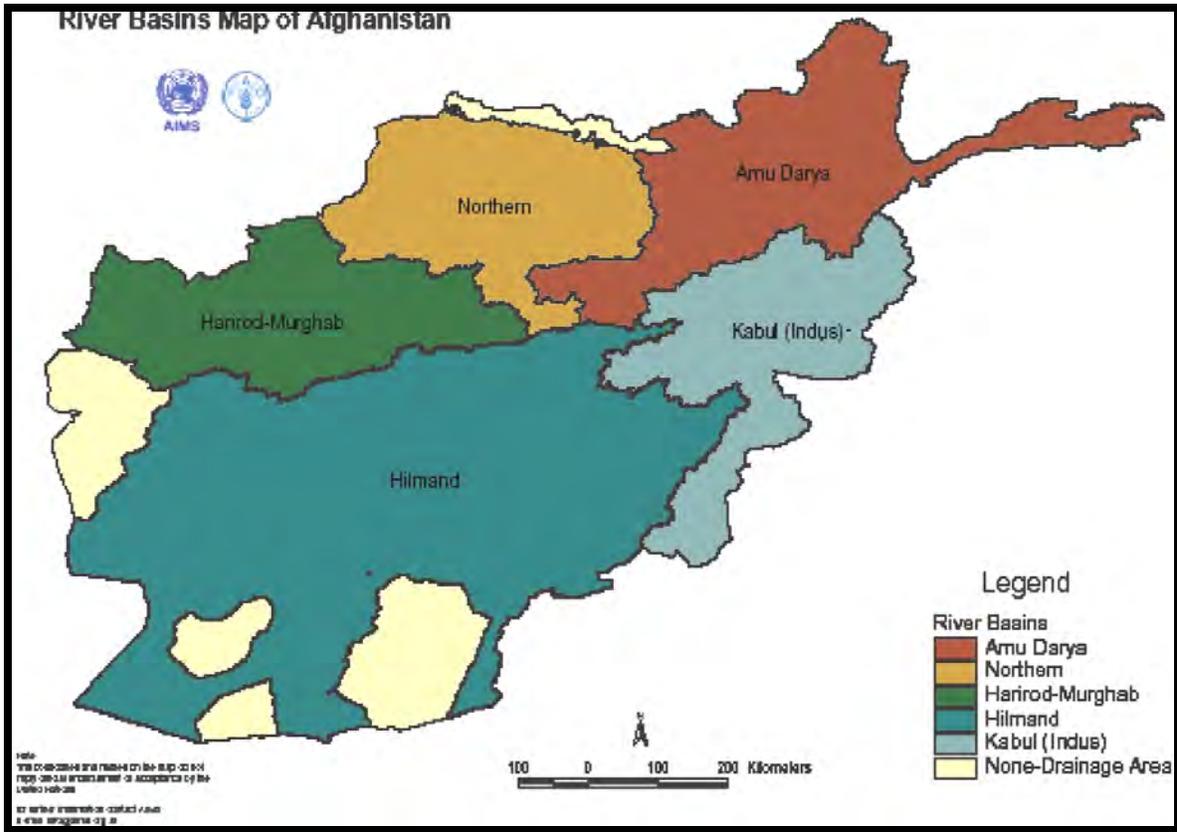
Languages

Pashto 35% of the population, Afghan Persian (Dari) 50%, Turkic languages (primarily Uzbek and Turkmen) 11%, 30 minor languages (primarily Balochi and Pashai) 4%. There is much bilingualism; many persons speak English to some degree.







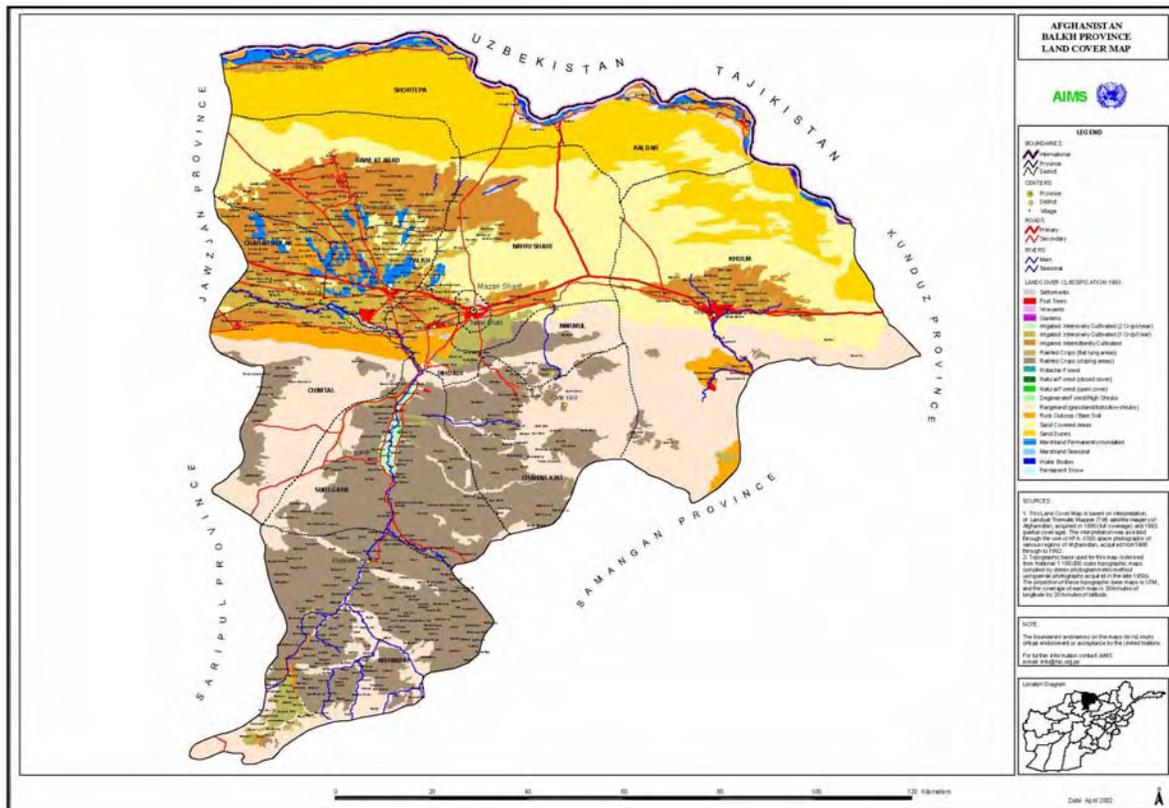


Background Information about the selected provinces¹¹

A. Balkh Province

Balkh Province in the North of Afghanistan has high potential in the agriculture sector. The main border crossing point located 30km north of the provincial capital, Mazar-e-Sharif, and the main access road to Uzbekistan links the province to a vibrant trade with the Central Asian countries. Mazar-e-Sharif is an attractive historical site. Its famous tomb of Hazrat Ali, or “Blue Mosque”, attracts many tourists and pilgrims. With a population of approximately 250,000 inhabitants, Mazar is also an important trade hub. Major shares of imports from Central Asia arrive in Mazar and change hands through a diverse services sector. The significant natural gas resources of Sheberghan near Mazar supply a thermo power plant and constitute an important retail business distributing gas to other locations in Afghanistan.

Fig-2 Map of Balkh Province



¹¹ Source: Regional Rural Economic Regeneration Strategies (RRERS) GRM www.aisa.org.af/Downloads/ProvincialProfiles/Nangarhar.pdf and www.aisa.org.af/Downloads/ProvincialProfiles/Balkh.pdf

Balkh has fertile agriculture land. The Province obtains its abundant water resources from as far away as Bande Amir in Bamyan that mainly feed into the ground water aquifer and into well maintained irrigation systems. Horticulture, field crops, livestock, and niche sectors like mulberry/silk are traditional sectors that are being revived in Balkh. New ventures for Afghanistan, including oil seed production, are being challenged with the active participation of Balkh University. A range of financial services are available in Mazar and in the Province, where e.g. finance cooperatives are successfully being piloted. Balkh is a politically active Province with a majority Tajik population which represents a special situation. It is comparatively safe, and the economy based on a mix of agriculture, Medium, Small and Micro Enterprises (MSMEs) and Services is developing.

Natural Resources

Balkh Province has *limited perennial river water* flowing from higher altitudes in the south of the Province into the northern plain, which harbors *good ground water* resources. The water table is fairly deep, though accessible for tube well irrigation. During the war many of the tube wells deteriorated. Due to a lack of irrigation resources, parts of the agricultural land have deteriorated as well. Rehabilitation of the irrigation system has been ongoing for the past few years, and today big almond and apricot orchards are being planted. Overall, the good soil and water quality allow for intensive double cropping in the northern plain, and there is potential for various kinds of annual and perennial crops.

Natural gas from Sheberghan and Turkmenistan is the main source of energy. Mazar is also supplied with electricity from Central Asia through the power line that is currently under construction and will electrify Kabul in the near future.

Minerals are not abundantly available. Coal is being exploited in Dara-e-Suff, a District which has now falls under the administration of Samangan Province. Balkh Province has *sparse vegetation*. The northern belt along the Amu Darya River is deserted, and the southern hillsides are sparsely covered with shrubs and herbs for pasturing. Farm forestry provides fuel and construction wood for the Province. However, high-quality timber is being imported from Central Asia and Russia – not only for Balkh, but for the whole country.

Human Resources

Mazar-e-Sharif has a population of approximately 250,000 and is the fourth largest city in Afghanistan. The comparatively high literacy rate can be attributed to a tradition of high educational standards in the Province, especially at higher levels. Mazar has a private college and a private (Turkish) University providing high quality education. The capital's Government University is currently improving its curricula and the university infrastructure. It has been said that the country's highest computer literacy rate is found in Mazar, though this needs verification. Mazar has a good social infrastructure with private clinics and a Government Hospital, a sufficient number of schools with high enrolment figures for girls.

Agriculture

The warm climate and moderate winter frosts are conducive to intensive *double cropping agriculture* in Balkh. *Mixed farming systems with livestock, field crops and horticulture* dominate the sector. In areas where tube well irrigation is functional, large scale rehabilitation of perennial horticulture and almond orchards is ongoing. In remote districts, subsistence farming is dominant and seasonal migration for income generation is more prominent than agricultural intensification. An important tribe of transhumant shepherds (Kutchi) is based in the Mazar region. During the summer, the Kutchi take their herds to graze at the high altitude pastures of Badakhshan Province. After this period, the sales of small ruminants are an important economic activity in the region.

Cereals and potato are the most common field crops in Balkh. However, there is a trend towards oil seed production, components of chicken feed and other products in the province motivated by demand from Central Asia. Soybean and oil crops like safflower and canola achieve good prices abroad, and the numerous trucks returning empty from Mazar to Central Asia offer transport at good conditions. New crops are subject to research before they can be exported. Research into field crops diversification comprises new but little external input technology development like “zero tillage” and Integrated Crop Management (ICM) in general.

Balkh has *traditionally exported perennial horticulture products*. The rehabilitation of the fruit drying, nuts grading and packaging industries is being done in parallel to the large scale rehabilitation of destroyed orchards. Though annual horticultural crops cannot compete with more fertile regions like Laghman Province, water melon and onion are two main products sold at Kabul markets. A variety of other crops are being produced and sold at local markets in Mazar.

Livestock

Most farming households keep cattle. The *rehabilitation of the high-standard breeding tradition* will soon commence, and the former dairy plant in Mazar is currently being modernized. Animal power is gradually being replaced by tractors, providing increasing potential for milk cows. Small ruminants are mainly managed by nomadic Kutchi whose herds comprise hundreds of animals that supply a considerable share of the regional market needs.

Land tenure

The average farm size varies across the Province. Most farming households in the remote districts are small land owners with an average farm size of 2 jerib. A small number of farmers own large areas of irrigated land, and land holdings in the deserted strip of land south of the Amu Darya River comprise 100ha and more.

Perennial horticulture is being rehabilitated on land irrigated by deep tube wells and drip irrigation systems.

Agricultural support services and input supplies

Mazar is an urban centre where a large variety of commercial inputs is available. The Ministry of Agriculture, Irrigation and Livestock (MAIL) has commenced a restructuring

process to staff individual Departments (e.g. Extension) and define function. Though urgently needed Government services in support of the agriculture sector are not yet functional, NGOs, FAO and other organizations, together with Balkh University in Mazar, cover a wide range of services. Functional research units are managed by NGOs like JDA or FAO. The silk research centre based in Mazar will soon start to revitalize silk production in the north of Afghanistan.

Agricultural structures (farmer groups/organizations/larger farmers etc)

Balkh Province has an *increasing number of urban-based, privately initiated organizations* with a growing membership base. Finance cooperatives (credit unions) initiated by WOCCU are a model for the provision of credit products to the entire country. Former cooperatives still exist and are activate around oil seed production and marketing, fruit drying, seed production dairy and silk. While still weak, farmers' organizations in Balkh will soon become relevant. The fairly homogenous ethnic structure in the Province could be the main reason for the comparatively high number of farmer organizations in Balkh.

Agriculture related businesses

Mazar is *largely a trade centre*. Agro Chemicals like seed, fertilizers and pesticides, as well as agro machinery (tractors, reapers, threshing machines etc.) are imported from Central Asia or reach Mazar through Kabul market. Mazar has a good investment climate as it offers relative political stability, good security (promoted by the strong presence of the German PRT), good access through linkage roads and the airport, and because it has electricity. Plans for future projects comprise a new dairy, a fruit drying factory, oil extraction; concentrate feed mix for animals, grain mills and others.

Summary of key potential development opportunities

The key potentials of Balkh Province are:

1. Agriculture:

- Field crops, especially grains. High potential for diversification into oil seed production
- Perennial horticulture and nuts/almonds
- Niche products like natural silk.

2. Livestock:

- Dairy production & small ruminants (A good part managed by nomadic Kuchis of local origin).

Credit

Diverse financial products and services are currently being offered by a number of established and newly emerging Microfinance Institutions, including the First Microfinance Bank (FMFB), ARMP, Kabul Bank, BRAC, WOCCU, Women for Women, and Madeira.

Other business activities

The services sector (trade, finance services, government, business travel and tourism), Small and Medium Enterprises (SMEs) for agri processing and production of high-value/

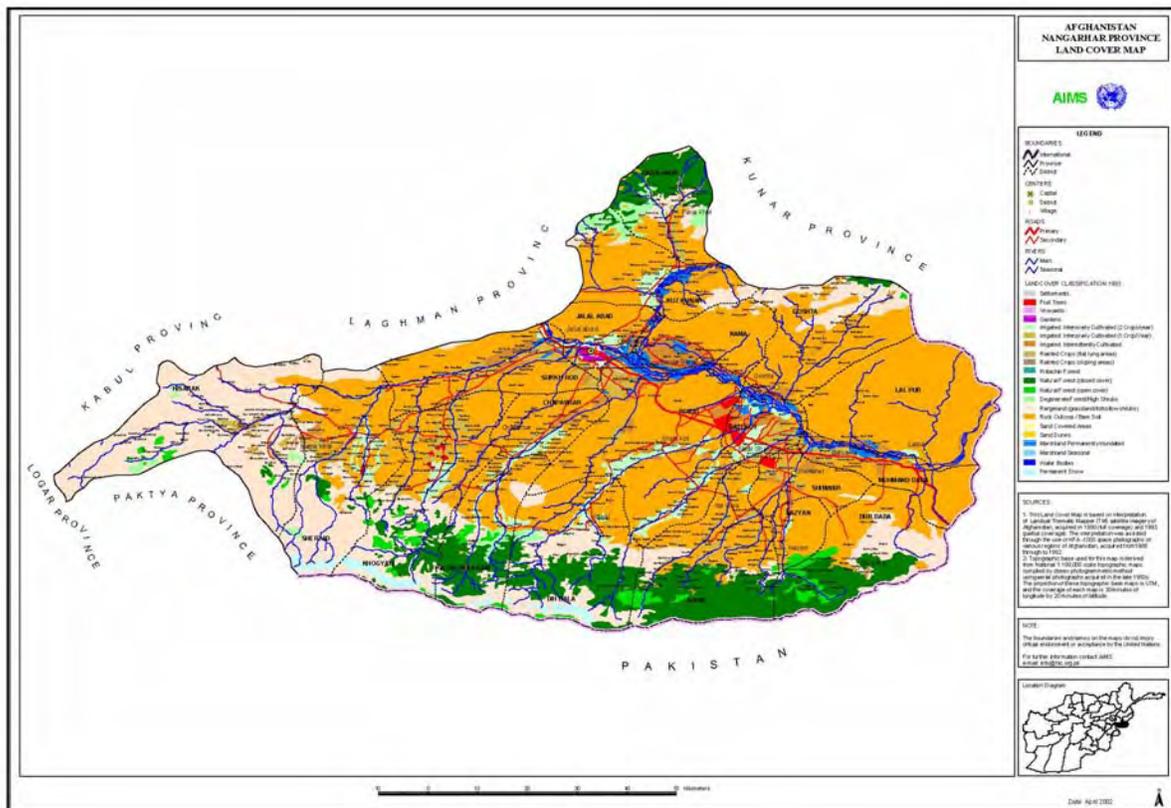
high-tech goods) summaries the good growth potential for Mazar. Labor costs are generally lower than in Kabul, Nangarhar or Herat, giving Mazar a comparative advantage over these Provinces. The availability of investment capital through trade will support the rehabilitation of an important and diverse SME sector.

B. Nangarhar Province

Natural resources

Located in eastern Afghanistan, the province of Nangarhar shares a border with Pakistan's NWFP province. The majority of population in both Nangarhar and NWFP are Pastun and, on both sides of the international border, most inhabitants share a similar tribal structure, language and religion, along with many cultural traditions. Nangarhar's capital city of Jalalabad lies on an ancient trade route leading from Kabul via the Khyber Pass to Peshawar and the Indian subcontinent.

Fig-3 Map of Nangarhar Province



Nangarhar province is *endowed with a lot of natural resources*. In Kogiany district of the province there are huge mines of high quality marbles which are used locally and also exported to other countries. Natural forest is found in 11 districts adjacent to SpinGhar. Nangarhar has abundant water resources. The major sources of irrigation are Kabul and Kunar rivers and 12 main perennial washes from SpinGhar. There are 78 major primary canals in the province having a length of 365.3 Kms. The major and only dam in the

province is Duranta dam build in 1957 with a capacity of producing 11 Mega watt of electricity. The dam is silted now and only produces 8 Mega watt of electricity.

All sectors are slowly recovering from the effect of the war. The major investments are in the field of agriculture, livestock, infrastructure and governance. DAI and PRT are the major players in the province while other international NGOs like Relief International, MADERA, DACAAR, German Agro Action, Swedish Committee and others are also contributing to the development of the province. The majority of the people depend on agriculture and livestock but these two sectors were badly hit by war and drought. The irrigation infrastructure is slowly recovering. The recent floods in the province have also damaged the irrigation infrastructure, agriculture land and contributed directly to the loss of livestock and human life.

Human Resources

According to an estimate, more than 60% of the population migrated to Pakistan during the war and roughly 45% of them have permanently returned. Back and forth movement of people from Nangarhar to NWFP is very common due to free access along the border. Jalalabad, as the provincial capital and major centre of business, attracts people from other parts of the province and even the adjacent provinces in search of jobs, education and other facilities. Roughly 30 % of the people living in Jalalabad and its surrounding areas have migrated from other places mainly Kunar and Laghman provinces. Kutchis form 10-15 % of the population in the province. These are nomads that come to Jalalabad during the winter and mainly settled in Surkhrod, Kama and Behsud districts of the province. Some of the Kutchis have settled down in the province, abandoned nomadic life and have started small businesses.

Educational facilities in the province are relatively better compared to other parts of the country and there is an increasing trend toward more education. Nangarhar University located in the provincial capital provides higher education to the residents of the province and adjacent provinces. A network of school for boys and girls exist in the provincial centre and district level. The literacy rate in Nangarhar is approximately around 40%. Also, there is an increasing trend towards vocational training, due to expanding job opportunities in the provincial centre.

Agriculture

According to the Department of Agriculture in Jalalabad, there are 97,000 hectares of arable, irrigated agricultural land in the province. There is also some rainfed agriculture, but it is very less compared to irrigated agriculture. During the war, most of the land was abandoned either due to migration of the people or the collapse of irrigation system. During the last five years, the agricultural sector is beginning to recover and the trend toward multiple cash cropping, especially for vegetables, is growing. During the last five years, improved seed and fertilizer is becoming more easily available to farmers through different organizations; also the mechanization of agriculture is on the rise.

Nangarhar had an extensive irrigation system before war, but most of it was destroyed during the war and now different organizations are working for its rehabilitation. Rivers,

washes and springs are the major sources of irrigation in the provinces. The irrigation structures are canals, Karezes and wells. The traditional *Mirab* (water master) system is very strong in the province and *Mirab* exists almost in every big village to regulate water distribution and to repair the irrigation structures. The Department of Irrigation and Water Resources is responsible for water management in the province having its central office in Jalalabad and seven district offices. Currently, the EIRP (Emergency Irrigation Rehabilitation Project), which is funded by World Bank and that has its regional office in Jalalabad, is working on small and medium projects, including intake repair, protection walls and cross drainage structures.

Crops

Nangarhar can rightly be called the *food basket for the whole of Afghanistan* as most of the crops produced here are consumed in different parts of the country. Main summer crops grown in the province include rice, maize, cotton, sunflower, beans and potato; the winter crops are wheat, barley, sugarcane, potato and mustard. There is a growing trend of vegetables being growing in the province, especially as a substitute for poppies, due to the increasing demand for these products and better prices.

The vegetables normally grown during summer are okra, tomato, egg plant, pepper, pumpkins, cucumbers, spinach, lettuce and others. There is ample of scope for extending the summer and to introduce vegetable cultivation during off-season using plastic tunnel technology, e.g. mint was being grown in Behsud district using this technology and earning a decent amount by supplying fresh mint to the urban market during winters. The winter vegetables are onion, cauliflower, turnip, spinach, radish, carrot, cabbage etc. Rudat district is well known for potato and onion production. Before the war, traditional crops like wheat, barely, maize, rice was grown. But in the last five years, there has been a major shift towards multiple cropping and introduction of new cash crops and verities. The shift in crop pattern is mainly due to the knowledge brought from Pakistan by returnees and the recent extension and input support from different projects and donor supported organizations, such as DAI, RI, GAA and ICARDA, which are the main external organizations supporting agricultural development in the area.

Most of the vegetables and crops produced are being supplied to Kabul and other parts of Afghanistan. Some of these crops and vegetables are sold locally. There is a big fruit and vegetable market in Jalalabad where most of the fruits and vegetables are sold. There are also markets outside Jalalabad which are open on specific days where farmers from the surrounding villages sell their produce. For example, the market in Batikot district operates every Friday.

Fruits grown in the province are grapes, apricot, oranges, walnut, persimmon, guava, plum and watermelons. People from outside come to buy it or they are supplied to the major market in Jalalabad or to the regional markets. The water melons and oranges of Jalalabad are very well-known and are consumed locally and also exported. There are government olive farms along the Torkham and Jalalabad highway that were planted during Russian occupation; recently a factory has opened in Jalalabad to produce olive oil by processing the olives from these farms.

Livestock

No exact data is available about the livestock population and composition. Discussion with relevant people revealed that around 70% of the households in the rural areas keep one or two cows. Goats are kept by the households in Dara Noor, Khoghani and Sherzad districts. Kutchis have big herds of sheep. Livestock are both kept for household consumption and also for sale in time of need. Different products like milk, meat and skins are hides are obtained from livestock. Milk is processed into different products like cheese, yogurt, butter which is mainly used for household consumption; the surplus is sold to the market especially during the spring when there is sufficient fodder. There is a big Saturday market in Jalalabad for sale and buying of livestock. Various regional markets also operate on different days of the week.

Fisheries

Due to abundant water resources in Nangarhar there is *huge potential for development* of the fishery sector. Looking at this potential, a government fishery farm was established with assistance of China government in 1967 but this fish farm (to produce fingerlings) was destroyed during the war. A private company was hired by the Ministry of Agriculture to reconstruct this farm and it became operational in 2006. Different NGOs like Relief International, GTZ are providing technical and financial assistance to the interested farmers for establishing private commercial fish farms. Some people have established fish farm on a self-help basis. The total number of such private, small scale commercial farms ranges from 40-50.

Land tenure

According to an estimate provided by the Agriculture department in Jalalabad, more than 20 % of the people in Jalalabad are landless. Only 5% of the farmers can be classified as big i.e. having more than 20 jeribs of land. Majority of the farmers (60%) are medium farmers having a land between 5-20 jeribs and the rest (35%) are small farmers having less than 5 jeribs of land.

The most common system of sharecropping is 1/3rd system in which all the inputs and labour is provided by the sharecropper and two parts of the produce goes to the owner and one to the tenant. This system is valid only on irrigated. Leasing of land is also prevalent in the province. One jerib of canal irrigated land is leased for 350 -560 Kgs of Wheat and pump irrigated land is leased for less than 280 Kgs of wheat/ jerib.