

Community Consultation Proceedings

Community Consultation Workshop on Climate Change Adaptation in Water, Agriculture, and Energy Sector in Sost Valley, Upper Hunza of Hunza River Basin

9 November 2016, Sost, Pakistan



About HI-AWARE

The Himalayan Adaptation, Water and Resilience (HI-AWARE) Research Consortium conducts research and pilot interventions, capacity building and policy engagement to enhance the climate resilience and adaptive capacity of poor and vulnerable people living in the mountains, hills and flood plains of the Indus, Upper Ganga, Gandaki and Teesta river basins in Pakistan, India, Nepal and Bangladesh.

HI-AWARE aims to influence policy and practice to aid the climate resilience and adaptation of poor and vulnerable populations in the region by generating evidence based knowledge on geophysical, socioeconomic, gender and governance drivers and conditions leading to climate vulnerability, as well as monitoring and assessing adaptation measures. It focuses on identifying 'critical moments' when communities are most vulnerable to climate risks, 'adaptation turning points' when existing adaptation strategies no longer work, and "adaptation pathways", sequences of policy actions that address both short-term responses to climate change and longer term planning. It looks at strengthening the expertise of researchers, students and science-practice-policy networks to conduct as well as use research on climate/social vulnerabilities, resilience, and adaptation.

HI-AWARE comprises of five consortium members: The International Centre for Integrated Mountain Development (ICIMOD), the Bangladesh Centre for Advanced Studies (BCAS), Pakistan Agricultural Research Council (PARC), The Energy and Resources Institute (TERI)-India, and Alterra-Wageningen University and Research Centre (Alterra-WUR).

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HI-AWARE Internal Report

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Community Consultation Workshop on Climate Change Adaptation in Water, Agriculture, and Energy Sector in Sost Valley, Upper Hunza of Hunza River Basin

9 November 2016, Sost, Pakistan

Organised by

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Pakistan Agricultural Research Council (PARC), Islamabad

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Photos: Members of PARC and GRSO

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Acronyms

| | |
|----------|--|
| CAEWRI | Climate Change Alternate Energy and Water Resources Institute |
| NARC | National Agriculture Research Centre |
| PARC | Pakistan Agriculture Research Council |
| HI-AWARE | Himalayan Adaptation, Water and Resilience Research on Glacier and Snow pack Dependent Areas |
| GRSO | Gojal Rural Support Organization |
| GLOF | Glacial Lake Outburst Floods |
| VOs | Village Organizations |
| CBOs | Community Based Organizations |

Executive Statement

The Climate Change Alternate Energy and Water Resource Institute (CAEWRI) of NARC had organized a one-day community consultation workshop on climate change adaptation in Sost, in the Hunza valley of the Upper Indus Basin on 9 November 2016.

The main objective of the workshop was to provide an overview of the HI-AWARE project to the people of the area and to inform them about PARC's plans there. Another objective was to create awareness in the local community about the impacts of climate change and possible adaptation measures in sectors like agriculture, energy, and water. By using collaborative discussions the workshop also aimed at identifying climate-related stresses faced by them.

Many climate experts and scientist from the PARC HI-AWARE team had participated and shared their knowledge and information with community members regarding climate change, climate-smart agriculture practices, and different climate adaptation measures to minimize the impact.

After the inaugural session a technical session was started that focused on climate change impact particularly on the livelihood of mountain people. The type of responses, actions, and adaptation measures to reduce the impact of climate change and to enhance the adaptive capacity of vulnerable persons were elaborated.

The next session was an open forum for community members to share their concerns and problems with respect to agriculture, energy, and the water sector in a climate-change scenario. After the discussion it was realized there was a need for proper research on how to tackle climate change problems in the Upper Indus Basin.

People also demanded training and workshops on climate-smart agriculture practices to enhance their knowledge and skills.

In general the community workshop was very qualitative in terms of content, quality of participation, and gender balance. To take things forward, people asked for more government and international investment in the Upper Indus Basin for adaptation and mitigation interventions in the energy, forest, water, and agriculture sectors to better their livelihoods.

Introduction

The Climate Change, Alternative Energy and Water Resources Institute (CAEWRI), of the Pakistan Agriculture Research Council (PARC) had organized a one-day community consultation workshop on 9 November 2016 on climate change adaptations in the water, agriculture, and energy sectors in Sost valley of the Upper Hunza under the PSDP funded project titled 'Himalayan Adaptation, Water and Resilience (HI-AWARE) Research on Glacier and Snowpack Dependent Areas. The workshop was aimed at identifying the climate-related problems faced by people in the areas in a discussion with local communities. It also aimed to improve the understanding of local communities living in this arduous terrain - the Upper Indus Basin - of adaptation of climate-smart agricultural practices to cope with climate change.

The workshop was attended by local people, farmers, and other stakeholders. Researchers, practitioners, and prominent scientists from PARC gave the participants valuable information on climate extremes and risks associated with climate change, particularly in the context of the Upper Indus Basin.

There were two sessions. The first contained general presentations revolving primarily around climate extremes and associated risks, which affect people's livelihoods. The second session was a general discussion with locals to identify their main problems related to climate change. Participants particularly focused on some adaptation ways. Community representatives and farmers gave information regarding their problems in the agriculture, water, and energy sectors.



Figure 1: Local community members during workshop



Figure 2: Chairman PARC attending the workshop along with senior management of the PARC's research centers

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Inaugural Session

Mr Raza Muhammad, Chairman Gojal Rural Support Organization (GRSO), inaugurated the workshop. He welcomed the PARC-HI-AWARE team and praised their efforts in the field of agriculture development and climate change. Then the HI-AWARE team was introduced by PARC and they gave a brief overview on climate change impacts on livelihoods of people living in the Upper Indus Basin.



Figure 3: Mr. Raza (Chairman GRSO) addressing the workshop

Presentations

The Chairman of PARC, **Mr Yusuf Zafar**, said that climate change is no more a myth, and there is an urgent need to start adaptation in each sector, especially in agriculture and water. Communities in mountain areas are more dependent on agro-pastoral activities and climate change is in fact affecting every component of mountain ecosystems and their livelihoods. He mentioned that the Upper Indus Basin is more vulnerable to climate change due to its fragile environment with highest snow peaks, glaciers, GLOF events, and verticality of mountains along with instable terrain. Community-based and ecosystem-based adaptations are imperative in creating climate change resilience and adaptive capacity of vulnerable communities.

A brief introduction of the HI-AWARE project was given by **Mr Bashir Ahmad** (PI HI-AWARE project NARC). He elucidated on the overall scope and objectives of the project. The project has not only adopted a comparative and cross-scalar approach, with research and pilot adaptation intervention sites representing a range of climates, hydrological conditions, and socio-economic contexts, but also actively engages different stakeholders in the research, piloting, and demonstration process.

‘Community-based adaptations are imperative to create climate change resilience and adaptive capacity of vulnerable communities’



Figure 4: Chairman PARC addressing the workshop

Mr Ahmad also briefly highlighted the objectives of the current workshop and expressed hope that it would help participants understand the problems local people were facing with respect to climate change.

Mr Munir Ahmed, Director CAEWRI-NARC, gave an overview of the scope of HI-AWARE's initiatives in the Upper Indus Basin. These include possible climate-smart interventions and activities, which may be installed and implemented in the near future. PARC has been working all over Pakistan in improving agricultural practices of farmers. The organisation is also involved in research related to agriculture and livestock.

Mr Nadeem Amjad, member PARC, observed that climate change has impacted every sector of Pakistan's economy because of its high vulnerability due to its geographical location and greater dependence on climate-sensitive sectors (water resources, energy, and agriculture). He elaborated that the country's water resources are under immense pressure from climate change because of dependence on glaciers and snowmelt in the Upper Indus Basin. Integrated water resource management is a key to successfully adapting to climate change.

Mr Sultan Ishaq (climate change adaptation specialist, HI-AWARE) shared his knowledge and experience with the workshop participants.

Mr Hussain presented an overview of the Gojal Rural Support Organization (GRSO) objectives and current working areas. GRSO is actively involved in the area and works for the communities through collaboration with different private and public sector organizations. GRSO has helped set up many youth, women, and volunteer organizations in the surrounding villages; it is engaging with people in activities for the development of the area. The focus is on strengthening the community's capacity in different domains. To that effect, they have conducted several trainings and projects to improve the livelihoods of people. In terms of agricultural activities, the results of training in fruit drying can be seen in a clear increase in the quantity and quality of apricot sales.

‘Climate change has impacted every sector of Pakistan's economy because of its high vulnerability due to geographical location and greater dependence on climate-sensitive sectors’



Figure 5: Mr. Hussain presenting the overview of GRSO, a community based organization

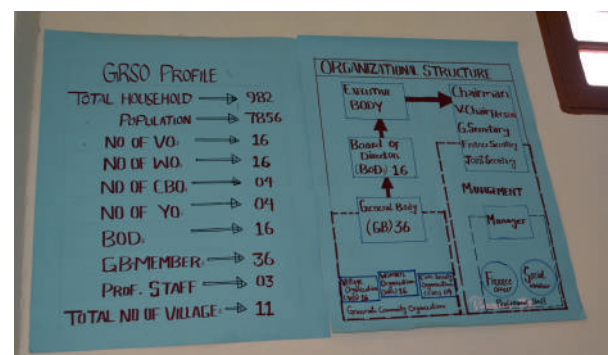


Figure 6: Chart showing GRSO's profile

2 Discussion Session

The D.G. of NARC, **Mr Azeem Khan**, facilitated a group discussion held during the workshop. A summary of this discussion is as follows:

Community members including women and men shared the problems they were facing due to climate change with the HI-AWARE team and PARC management. They praised PARC efforts and concerns in improving the livelihoods of climate vulnerable communities. Members from local communities in the high-mountain regions of the Hunza shared that climate change had devastating impacts on local environment and livelihoods.

They reported having seen a clear change in the weather pattern in the past 20-30 years. Previously, the weather in Upper Hunza was very harsh in winter and there was a lot of snowfall. A 50 year old farmer, recollected that in his childhood the snow fall had been about 2 feet.

The amount of snowfall made it difficult for them to walk. But now winters are dry and the snowfall quantity and period has lessened. The temperature of the earth's surface is now so high in winter that the snow does not remain for long periods of time any longer.

People also shared their observations of the variation in summer temperature and related parameters. They mentioned that summers are now clearly hotter compared to temperatures experienced 5-10 years ago. Residents of the Upper Hunza formerly did not require a fan or other cooling system in Summer, as the temperature was pleasant. But now they said they felt the need to use a fan.

Mr Sultan Dad, GRISO member, said that rainfall pattern had also changed. Earlier, rainfall had not been much and it did not occur in June or July. But now the area was experiencing more rainfall in these months and that was damaging crops and fruits. Moreover, these heavy rainfalls were causing flash floods and a rise in the water level of the river, which



Figure 7: A farmer highlighting problems related to agriculture



Figure 8: Mr. Sultan Dad, member of GRISO, shared his views on rainfall pattern change

‘Rise in temperature, reduction in snowfall, change in rainfall pattern, increase in frequency and intensity of extreme events of flash floods, GLOFs, and river bank erosion’

was damaging roads, hydro-power stations, and electric supply systems. In addition, road blockages and disturbances in the electric supply were making life and livelihood activities difficult for people.

People reported invariably that there had been a reduction in snowfall, change in the rainfall pattern, and rise in temperature, particularly in Winter. There had been an increase in frequency and intensity of extreme events of flash floods and GLOFs as also river bank erosion. The changing climate had adversely impacted agriculture and fruit production.

The participants discussed long and short-term challenges for them as a result of hydro-meteorological hazards, worsening due to climate change. These hazards would range from primary impacts like threats and damage to life during sudden disasters such as floods

Mr Haji, a farmer and member of GRSO, gave an example of the severe impact of erosion due to river flow. More than half of the land of two villages, named Passu and Gircha, had vanished due to river bank erosion. People had lost their valuable lands, trees, and houses due to this slow but, devastating hazard. The flow in the river is at its peak during Summer (July and August), which then takes away the precious land in its wake.

Some participants said that the impact of climate change is also evident in the melting of glaciers, seasonal changes in crop cultivation, sudden temperature shocks, erratic rainfall during harvesting time, and flash floods. The drinking water networks of villages are also affected by such floods in late summer. Likewise, if snowfall does not occur in winter, people do not get sufficient water for drinking and domestic use in the pipelines in early summer.

Ms Saliqa, member of a women's organization, talked about the health problems and lack of health care facilities in the area. Changing weather patterns were also causing many health problems in the villages that had not been there previously. Unfortunately, they do not have health care facilities. People have to travel to Central Hunza in case of serious health problems and accidents. Many people lose their lives, when they do not reach the hospital in time due to road blockages. She also said people of

Gojal were facing a harsh life after the Attabad Lake that formed due to landslides.

Residents of Upper Hunza demanded more national and international investments in the Upper Indus Basin for adaptation and mitigation interventions in the energy, water, forest, and agriculture sectors for sustainable livelihood development. They also asked for training sessions for farmers on best agricultural practices and to provide them with good quality seeds and livestock.



Figure 9: Mr. Haji talking about river erosion and its impacts

‘Less snowfall causes unavailability of drinking water in early Summer in some villages. Moreover, drinking water network get damaged due to floods’

Sector-wise Climate Change Impact

The table shows analyses of climate change impact and suggestions for interventions

| Sector | Climate extremes | Impacts | Suitable Interventions (suggested by HI-AWARE team to minimize impact) |
|-------------|--|---|---|
| Agriculture | Increase in rainfall | Floods, damaging crops, fluctuation in sowing period, | Improve drainages, mix cropping, initiate rain-water harvesting, use flood tolerant varieties, do tree plantation |
| | Decrease in snowfall | change in sowing time (water not available during sowing period), drought | Drought tolerant varieties, rain water harvesting, livelihood diversification |
| | Seasonality change and temperature shocks | Uncertainties about when to sow, cultivate, and harvest | Reliable weather condition updates from nearest weather station |
| | | | Mix cropping/crop diversification |
| | | Crop damages due to sudden temperature increases, diseases in livestock due to sudden heat stress | Livelihood diversification (reduced the climate stress) |
| | | | High temperature tolerant varieties and fast maturing crops |
| | | | Crop diversification |
| | | | Heat tolerant livestock |
| | | | Soil management practices |
| | | Crops damaged by unusual rainfall | Flood tolerant varieties |
| | | Damage and hinder to fruit drying in sun | Improving drainage |
| | | | Livelihood diversification |
| Water | Flash flooding | River bank erosion, damage to irrigation network, crop damage, infrastructure damage | Sowing based on reliable forecast |
| | | | Solar drying system can reduce the impact |
| | | | Plantations along river banks and channels? |
| | Fluctuation in flows | Glacial melting accelerates GLOF damage to irrigation, infrastructure, and crops, houses and cattle sheds | Flood tolerant crop varieties |
| | GLOF | | Fast maturing crops and plants |
| Energy | Extreme rainfall, flash floods and rise in river level | Damage to electricity poles and water channels, which brings water to the micro hydel ; Continuous low shading in winters | Improve drainages and irrigation infrastructure |
| | | | Climate smart agriculture technologies |
| | Unpredictable solid and liquid precipitation | Water not sufficient to produce electricity, disturbance in electric supply | Early warning systems |
| | Very low level of water in channels | | Emergency teams at village level |

Closing Session

The D.G. of NARC, **Mr Azeem Khan**, concluded the consultation workshop by acknowledging the participation of people from different hamlets in Upper Hunza. He applauded that the workshop turned out to be very qualitative in terms of gender balance, equity and participation. He said there was a joint need of effort and coordination from both government agencies and communities to deal with climate change.

He praised the active participation of representatives from different VOs and CBOs in Upper Hunza who had shared information on the impacts of climate change and had suggested good recommendations to minimize the impacts. He said that people living in these vulnerable areas would know better what problems they were facing now and what were the upcoming challenges for them.

Keeping in mind their fruitful suggestions, PARC would make its best effort to help them in coping with climate change. It was also important to inform and sensitize other relevant organizations and institutes to work in collaboration.

At the end, **Mr Raza** expressed his gratitude to the PARC HI-AWARE team for arranging the workshop. He also appreciated HI-AWARE's initiatives with respect to climate change. Furthermore, he said the communities of Gojal, Upper Hunza were more vulnerable to climate change, and this workshop would not only bring awareness among them but also initiate serious dialogues and actions for climate change adaptation and mitigation in every sector, particularly in agriculture and water. He assured that GRSO would provide support in such adaptation and mitigation activities.

Annexure 1

Purpose of the event:

The main objective of the workshop was to provide an overview of the HI-AWARE project to the people of the area and to inform them about PARC's plans. Another objective was to create awareness in the local community about the impacts of climate change and possible adaptation measures in sectors like agriculture, energy, and water. By using collaborative discussions the workshop also aimed at identifying climate-related stresses faced by them.

Contribution to HI-AWARE results:

The workshop was in the context of HI-AWARE research component (RC3) - to identify climate

Figure 1: Gender Participation

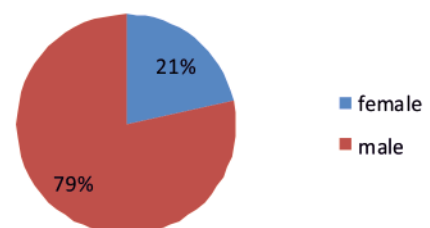
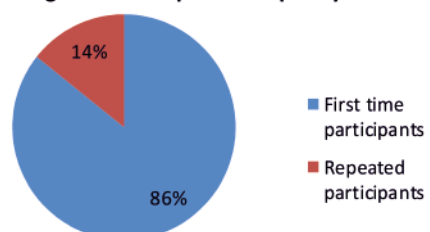


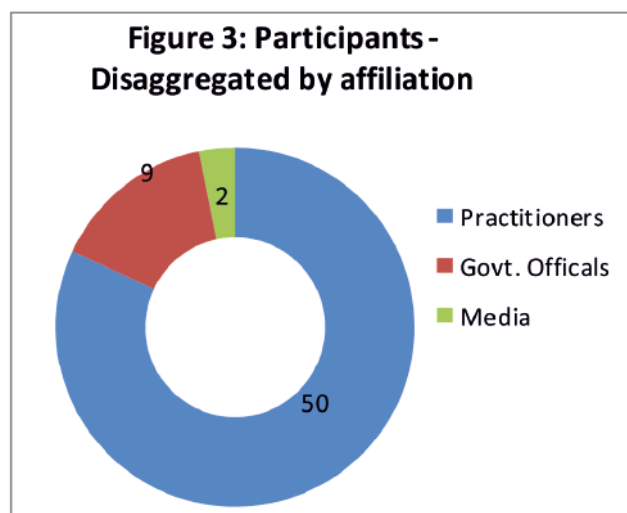
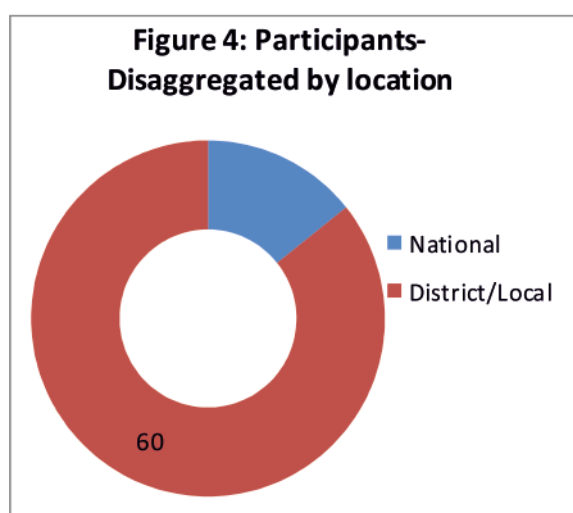
Figure 2: Participation Frequency



change impacts. It also helped identify critical moments faced by villages in the Upper Indus Basin. The report's key findings will be part of activity 3.2.1 under task 3.2 - Identification and prioritization of important adaptation measures.

Event statistics:

A total of 70 people had participated in this community consultation of which 15 were women and 55 men. 60 participants were attending a HI-AWARE activity for the first time.



Annexure 2

Schedule

10:00 am - 10:30 am: Inaugural Session

Welcome address: Chairman GRSO, Mr Raza Muhammad

10:30 am - 11:30 am: Technical Session

- (i) Remarks by Chairman PARC, Mr Yusuf Zafar
- (ii) Overview of HI-AWARE Projects and Objectives - PSO/PI HI-AWARE: Mr Bashir Ahmad, NARC
- (iii) PARC work plans: Mr Munir Ahmad, Director CAEWRI NARC
- (iv) Climate Change Impact: Mr Nadeem Amjad, Member PARC
- (v) Climate-smart agriculture practices & Climate-smart technologies: Mr Sultan Ishaq, Climate Change Adaptation Specialist, NARC, HI-AWARE

11:30 am - 2:00 pm Open Discussion

Moderated by D.G. NARC, Mr Muhammad Azeem Khan

Discussion by various community members (Sharing of knowledge)

Conclusion and Final Remarks: Mr Muhammad Azeem Khan

Annexure 3

| Name | Gender | Designation | Village/city |
|--------------------|--------|--------------------|--------------|
| Yusuf Zafar | Male | Chairman PARC | Islamabad |
| Nadeem Amjad | Male | PARC Member | Islamabad |
| Azeem Khan | Male | DG NARC | Islamabad |
| Munir Ahmad | Male | Director CAEWRI | Islamabad |
| Bashir Ahmad | Male | PSO CAEWRI | Islamabad |
| Zeeshan Tahir Virk | Male | WRS HI-AWARE | Islamabad |
| Sultan Ishaq | Male | CCAS HI-AWARE | Islamabad |
| Basharat Saeed | Male | LEAD Pakistan | Islamabad |
| Sher Ahmad | Male | DG MARC | Islamabad |
| Raza Muhammad | Male | Chairman GRSO Sost | Gircha |
| Mirza Hussan | Male | Secretary GRSO | Khyber |
| Hajji Jan | Male | | Nazimabad |
| Amin Khan | Male | | Khudabad |
| Akram Khan | Male | | Sost |
| Mohd Shuja | Male | | Sarteez |
| Farman Baig | Male | | Nazimabad |
| Karim uddin | Male | | Murkhun |
| Ifra Shahid | Female | WO Sost | Sost |
| Sadiqa Amir | Female | WO member | Murkhun |
| Zohra Jabeen | Female | WO member | Jamalabad |
| Fatima Ikram | Female | WO member | Khyber |
| Ahmed Faraz | Male | | Khyber |
| Akber Khan | Male | | Khudabad |
| Jamal uddin | Male | | Murkhun |
| Safi Ullah | Male | | Sost |
| Nizam uddin | Male | | Jamalabad |
| Muhammad Jinnah | Male | | Sost |
| Jabeen | Female | WO member | Nazimabad |
| Arsalan Ali | Male | | Nazimabad |
| Sajjad Ali | Male | | Gircha |
| Mohsin Hassan Khan | Male | | Sarteez |
| Faiz Muhammad | Male | | Sost |
| Dilawar Khan | Male | | Sarteez |
| Aman Ali | Male | | Murkhun |
| Haider Baig | Male | | Nazimabad |
| Zarina Qadir | Female | WO member | Sost |
| Saliqa Nadeem | Female | WO member | Murkhun |
| Amir Ali | Male | | Nazimabad |
| Saleem Baig | Male | | Sost |
| Babar Khan | Male | | Nazimabad |
| Safia | Female | WO member | Nazimabad |
| Tahira Rehman | Female | WO member | Sost |
| Noor Ali | Male | | Murkhun |

| | | | |
|-------------------|--------|-----------|-----------|
| Shah Muhammad | Male | | Jamalabad |
| Sultan Dad | Male | | Murkhun |
| Haji Baig | Male | | Nazimabad |
| Amin uddin | Male | | Murkhun |
| Kamal Uddin | Male | | Sost |
| Farman Ali | Male | | Nazimabad |
| Zareef Numa | Female | WO member | Sost |
| Sakeela Bibi | Female | WO member | Nazimabad |
| Bibi Zahida | Female | WO member | Gircha |
| Bakht Numa | Female | WO member | Gircha |
| Saira Nazar | Female | WO member | Gircha |
| Ulfat Karim | Male | | Jamalabad |
| Firaz Ali Khan | Male | | |
| Islam uddin | Male | | Jamalabad |
| Jamila Karim | Female | WO member | Sost |
| Tawakal Shah | Male | | Khyber |
| Mufiat Ullah Khan | Male | | Khudabad |
| Mohd Safeer | Male | | Sarteez |
| Ghulam Amin | Male | | Sarteez |
| Imam Panah | Male | | Gircha |
| Muhabat Karim | Male | | Gircha |
| Ashiq Ali | Male | | Khudabad |
| Ahmed Ullah Baig | Male | | Sost |
| Mohd Shifa | Male | | Nazimabad |
| Boi Nazar | Male | | Sost |
| Irshad Karim | Male | | Sost |
| Aslam Baig | Male | | Sarteez |

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