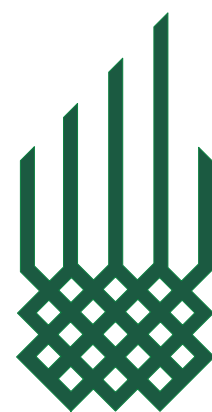


Policy and Institutions in Adaptation to Climate Change

Case study on responding to
water stress in Chitral, Pakistan



About ICIMOD

The International Centre for Integrated Mountain Development, ICIMOD, is a regional knowledge development and learning centre serving the eight regional member countries of the Hindu Kush Himalayas – Afghanistan, Bangladesh, Bhutan, China, India, Myanmar, Nepal, and Pakistan – and based in Kathmandu, Nepal. Globalization and climate change have an increasing influence on the stability of fragile mountain ecosystems and the livelihoods of mountain people. ICIMOD aims to assist mountain people to understand these changes, adapt to them, and make the most of new opportunities, while addressing upstream-downstream issues. We support regional transboundary programmes through partnership with regional partner institutions, facilitate the exchange of experience, and serve as a regional knowledge hub. We strengthen networking among regional and global centres of excellence. Overall, we are working to develop an economically and environmentally sound mountain ecosystem to improve the living standards of mountain populations and to sustain vital ecosystem services for the billions of people living downstream – now, and for the future.



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Policy and Institutions in Adaptation to Climate Change
**Case study on responding to water stress in
Chitral, Pakistan**

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Acronyms and Abbreviations

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About this Case Study

From 2008 to 2010, ICIMOD, in partnership with partners in China, India, Nepal, and Pakistan, conducted a series of four case studies under the Sida-supported project Too Much and Too Little Water. The series looks at responses and field experiences to support the development of adaptation approaches, including policy and institutional support, to meet the challenges emerging from climate change and other drivers of change. This publication is based on one these case studies. The other three case studies include:

- Policy and Institutions in Adaptation to Climate Change: Case study on tree crops in China, Nepal, and Pakistan
- Policy and Institutions in Adaptation to Climate Change: Case study on flood mitigation infrastructure in India and Nepal
- Labour Migration as a Response Strategy to Water Hazards in the Hindu Kush-Himalayas (2011)

The synthesis of these four case studies, 'Role of Policy and Institutions in Local Adaptation to Climate Change', was published by ICIMOD in 2012.

Other related publications include:

- Local Responses to Too Much and Too Little Water in the Greater Himalayan Region (2009)
- Diversified Livelihoods in Changing Socio-ecological Systems of Yunnan Province, China (2009)
- Adjusting to Floods on the Brahmaputra Plains, Assam, India (2009)
- Life in the Shadow of Embankments - Turning Lost Lands into Assets in the Koshi Basin of Bihar, India (2009)
- Living with Water Stress in the Hills of the Koshi Basin, Nepal (2009)
- Traditional Knowledge and Local Institutions Support Adaptation to Water-Induced Hazards in Chitral, Pakistan (2009)

Introduction

In Chitral, Pakistan, existing local institutions for water management play a major role in enhancing the adaptive capacity of local communities. However, government rules and regulations concerning water governance are posing challenges for community-based institutions and affecting the local capacity for adaptation. Hence, there is a need to examine the relationship between community-based institutions for water governance and local adaptation to inform decision-making to ensure that policy works to strengthen adaptive capacity.

This case study, focused on local water governance systems in Chitral, documents past and present systems and assesses the local capacity to adapt to changing climatic conditions. It also looks at the impact of governmental and non-governmental water sector interventions on the functioning of traditional institutions and how such interventions affect the adaptive capacity of local communities. The study attempts to answer the following research questions:

- What kind of water governance systems, particularly local institutions, exist for water management (including the management and maintenance of physical structures) in Chitral?
- What are the characteristics (accountability, transparency, equity, and inclusiveness) of governance systems and what role do these systems (including local institutions) play in sustainable water resource management? What are the constraints on local institutions?
- What external factors (policies, political influence, etc.) influence the functioning of local water governance systems?

The findings of the study are presented in two main parts. The first part presents the history of water governance in Chitral and examines the present-day water governance systems – both community-based and government-managed. It then compares these systems for functionality and good governance. The community-based system is then assessed in terms of its strengths and weaknesses to determine its effectiveness and sustainability and its ability to strengthen local capacity for adaptation to water stress. The second part outlines the water policy framework, including existing policies, institutional arrangements, implementation mechanisms, and investment in the water sector. The effect of these policies on local adaptation is assessed through a cause and effect analysis. The final chapter presents conclusions and recommendations for strengthening local adaptive capacity to water stress.

Methodology

The study primarily employed qualitative research methods for data collection, namely focus group discussions and key informant interviews, which were supplemented by a review of secondary data. Data collection started in March 2010 after site selection.

Study site selection

A number of sites were selected for study in Chitral District of Khyber Pakhtunkhwa Province, a water-scarce area. Selection was based on the type of water governance system employed: community-based or government-managed. Community-based systems were studied in the Mulkhow Union Council of Chitral. Five villages were chosen in Mulkhow – Nogram, Warijun, Gaht, Saht, and Kushum – as representing indigenous and modern community-based water governance systems. The villages of Danin in Denin Union Council and Morilasht in Koh Union Council were selected for the study of the government-managed systems.

Focus group discussions

Focus group discussions were used to gather information from communities directly involved in local water governance. Participants for focus group discussions were selected from among farmers, local representatives, teachers, and village elders, constituting the major stakeholders with knowledge of the local water governance system. A total of eight focus group discussions were held with an average of 11 participants each (Table 1). A checklist was developed for the focus group discussion based on the study objectives and research questions.

Table 1: Details of focus group discussions

Water governance system	Villages	Number of focus groups	Number of participants
Indigenous	Gaht Nogram Warijun Kushum (Mulkhov Union Council)	4	49
Modern	Saht Warijun (Mulkhov Union Council)	2	24
Government-managed	Danin (Denin Union Council) Morilasht (Koh Union Council)	2	18
Total		8	91

Key informant interviews

Key informant interviews were held with 13 people, including local leaders, village elders, and government officials. These interviews were usually conducted after focus group discussions to verify the historical information provided by focus group participants. Separate interviews were conducted with ten government officials to obtain information on policy issues. The same checklist was used for this purpose, but more in-depth information was obtained.

Overview of Chitral District

Chitral District is situated in the extreme northwestern part of Khyber Pakhtunkhwa Province and stretches over an area of 14,850 km² (Figure 1). It shares boundaries with Afghanistan to the north and west, Gilgit-Baltistan Province to the east, and the districts of Dir and Swat to the south (AKRSP 2007). Administratively, the district is divided into two tehsils, or administrative councils, consisting of 24 union councils.

Chitral has a population of around 385,000 people, with 48,000 households an average size of 7.9 persons. More than 90 per cent of the population live in rural areas (Chitral Bureau of Statistics 1998). More than 99 per cent of the population are Muslim (30 per cent Ismaili; 70 per cent Sunni). The area is also inhabited by ethnic minority groups including semi-nomadic Muslim Wakhis and Gujurs and the non-Muslim Kalasha people (IUCN Pakistan 1998, 1999).

The entire region lies in the rain shadow and receives very little rain. Variations in the frequency and duration of rain are the main reason for the prolonged droughts that occur in the district, affecting the socioeconomic conditions of inhabitants, especially in the northern part of the district. Precipitation ranges from 600 mm in the southern part of the district to 200 mm in the north (IUCN Pakistan 1999). The bulk of this precipitation comes in the form of snow during the winter.

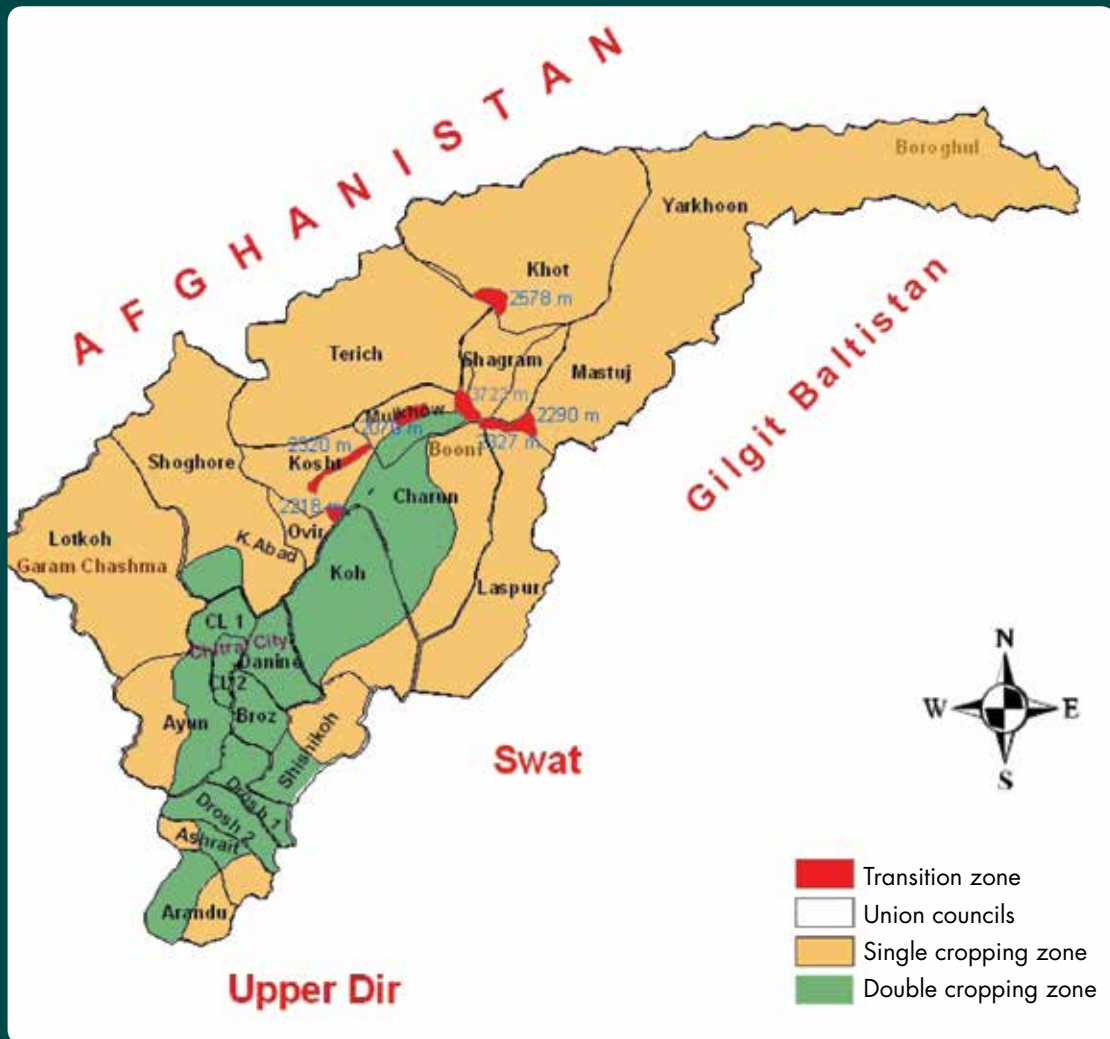
The main source of income in Chitral is subsistence agriculture with average land holdings of less than one hectare. Although 90 per cent of the population is engaged in farming, 75 per cent of household income is derived from off-farm sources. Agriculture is wholly dependent on surface irrigation distributed through a network of small irrigation channels. Perennial streams from glacial melt and natural springs are the only source of water for irrigation and drinking. The upper Kunar River, locally known as the Chitral River, is the only river flowing through the district and is primarily fed by glacial melt.

Water Governance in Chitral

History of water governance

The water governance system in Chitral has evolved over centuries to the present-day system. Chitral became part of Pakistan in 1947, but its status as an independent, princely state and its own system of governance continued

Figure 1: Land cover map of Chitral District



Source: Chitral Conservation Strategy

until 1969. The then rulers, the Mehtars, played a dominant role in the provision of services and management of natural resources, including water. Communities had no say in the water governance system. Irrigation channels were constructed and managed by governors and their appointees in the respective areas using forced labour. The rulers divided water among different clans according to the size of their land holdings. In addition, those of higher social status and close association with the royal family had more water rights. Each household was assigned a fixed quantity of water, available regularly throughout the season. Water conflicts were adjudicated by the Islamic Qazi courts, mostly based on traditional laws, and verdicts were readily accepted by both parties.

In 1969, Chitral was fully merged and integrated with Pakistan as a district of Khyber Pakhtunkhwa Province, formerly the North West Frontier Province (NWFP). This introduced local inhabitants to a new system of governance under which different departments were responsible for the management and administration of ecosystem goods and services. Although this system acknowledged communities as key stakeholders, it was a top-down approach in which communities once again had limited say in decisions related to their own development. Programmes were planned and implemented without taking their views, concerns, or knowledge into account.

Today, there are two types of water governance systems operating in Chitral: community-based and government-managed. The community-based system evolved from the system developed by the former rulers and the government-managed system began operating after the dissolution of the independent, princely status.

Community-based water governance

Local communities have continued using the same system of water governance that existed before 1969 without government patronage, and usufruct rights have remained in place. With the introduction of different participatory approaches by non-governmental organizations, another form of community-based governance based on the existing system emerged. Thus, the community-based water governance systems can be further divided into indigenous and modern systems (Table 2).

Indigenous system

The indigenous system of water governance was studied in Mulkhow region, one of the longest inhabited valleys in Chitral. Mulkhow has a total population of 13,998 people residing in more than 1,600 households (Chitral Bureau of Statistics 1998). The area is inhabited by a single, ancient ethnic group called Khow, who consider themselves the permanent and traditional inhabitants of Chitral.

The geographic and topographic conditions in Mulkhow make it a water-stressed area. Agriculture is the mainstay of local inhabitants; however, people also keep livestock for household consumption and to supplement household cash income. The communities in Mulkhow have been facing acute water shortages for many decades because of a change in rainfall and snowfall patterns. This has resulted in the drying up of springs, which are the only source of water in the area as glacial melt no longer supplies water to the valley. Now, springs start drying up in the spring and summer seasons making farming a difficult task.

According to respondents to the field study, the indigenous system of water management is a modified form of the governance system installed by the Mehtars, the rulers of Chitral from 1300 AD to 1969 AD (Table 2). Under this system, water was initially divided among different clans according to their social status, quantity of land, and affiliation to the royal family. Later, ancestors of the local people in Mulkhow equally divided their land and water among their decedents, thus providing the basis for the present-day community-based water governance system in the area. During the field study, respondents indicated that the indigenous water governance system evolved in response to increased pressure on water resources from population growth, a concurrent increase in the area of cultivated land, and an increase in the incidence of drought.

The customary laws regarding the management, distribution, and utilization of water established under the governance system installed by the Mehtars were so strong that, despite the demise of the state and the collapse of feudal structures, the system exists today with only slight modifications. The main modification has been the abolition of forced labour to build and manage the irrigation infrastructure; the present-day indigenous system ensures participation and democracy at all levels of its operation. The customary laws underpinning the system are largely unwritten, but have been documented in some areas when conflicts over water were litigated and verdicts written down.

Under the indigenous system, water is distributed on the basis of three methods: 'rongogh', 'sorogh', and 'chatogh':

- **Rongogh:** Rongogh (also known as 'aladawanogh') is defined as the free use of water resources irrespective of usufruct rights. This system of water distribution is practised when climatic conditions are favourable and there is enough water in streams. It is a first-come, first-served system and the person who receives water first from the main distribution network at the head of the channel can use all s/he wants. Under this system, users further downstream have to reserve water use with the farmers upstream, who upon finishing irrigating their fields are bound to handover the water to users downstream.
- **Sorogh:** Sorogh is the use of water by turn according to predefined usufruct rights. When there are acute shortages of water, the communities come together and decide to start sorogh, which continues until the end of September. With rising temperatures, water shortages have intensified and the duration of sorogh is shrinking.

Table 2: Comparison of indigenous and modern community-based water governance systems

Indigenous	Modern
Autocratic	Democratic
Less water rights holders	More rights holders
Less ownership	More ownership
Continuous water availability to water rights holders	Water is now available in turn because of an increase in water users

Households have started pooling water to irrigate their crops. After mid-October, when the cultivation of winter crops starts, the traditional system of sorogh is no longer effective. In this situation, cultivated lands in the upper areas of all villages, where the cropping season is longer, receive water first, gradually followed by those in the lower parts of the villages.

- **Chatogh:** Chatogh is where water is allocated to specific families, mostly where state guests used to rest. The quantity of such water is very little, but continuously available. This water is still allotted to those families, even though Chitral is now part of Pakistan.

The governance structure of the indigenous system is informal. There are rules and regulations, but no formal structures to implement them. The system is generally managed by a 'gram' (indigenous unit of social organization, usually a group of households around one mosque with the same interests), which contains representatives from each tribe/clan in the area. This informal governance structure is in place at both the micro and macro levels. At the micro level, a system has been developed for the distribution and management of water resources at the mosque level. Under this system, the rights of individuals are defined, and water distributed accordingly. At the macro level, water is managed between villages by village representatives who sit together and make arrangements for the distribution and management of water between villages.

One or more individuals are appointed as 'mirzhois' to ensure the equal distribution of water among users and to maintain the irrigation channels. Water users pay the mirzhoi for his services either in cash or in kind (usually grain) at harvest time. The mirzhoi is a positive aspect of the indigenous water governance system as it helps to prevent water theft and conflicts over the distribution of water.

The maintenance of irrigation channels is the collective responsibility of all water users, and every person in a gram must take part in repairing the channel; this system is known as 'mon'. If an individual cannot contribute time for maintenance or repair work they must depute someone else to do it by paying cash or in kind.

Communal water harvesting structures have also been constructed by the community to use water efficiently. These water reservoirs, called 'chat', are constructed at individual and village levels. Water from perennial streams and springs is stored in these reservoirs and used later according to a predefined distribution system. The water from these reservoirs reaches the land without any wastage. Households with no adult male member store their share of the water and use it during the daytime.

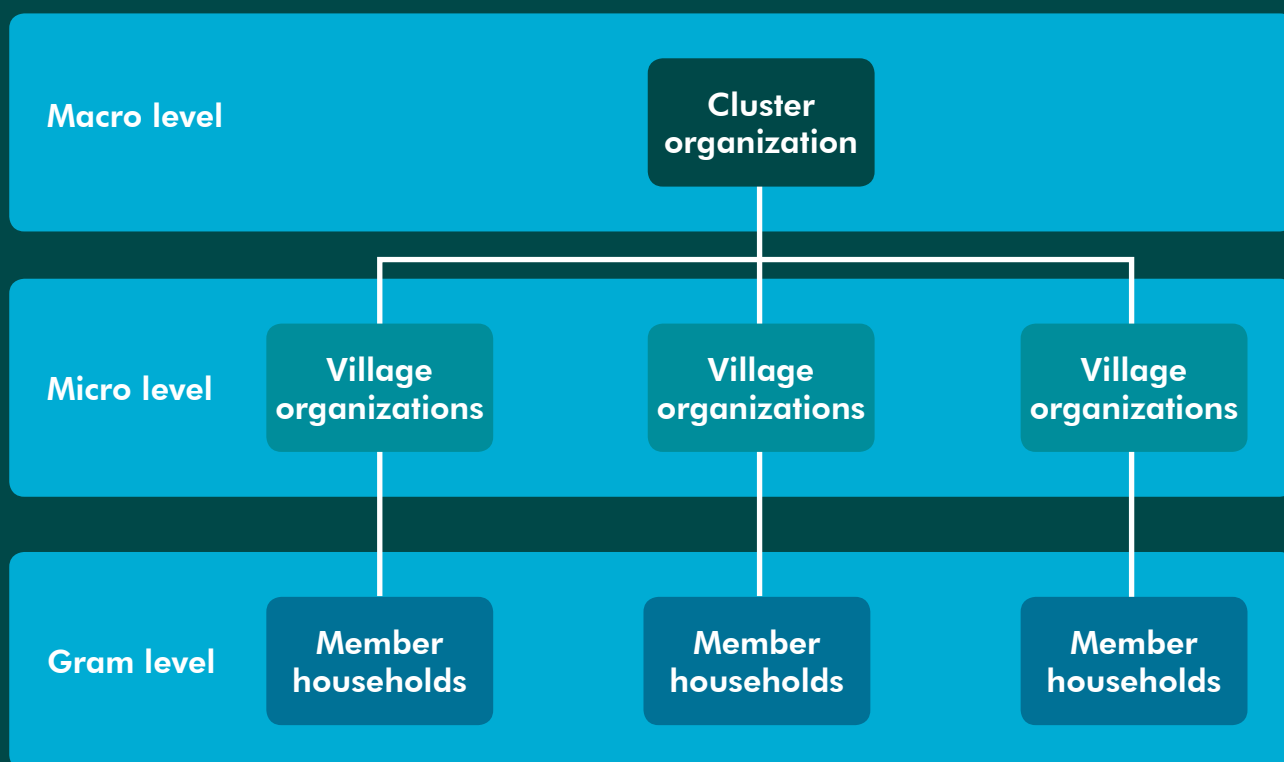
The distribution of water normally starts in the middle of March. However, the decision to start distributing water is made taking into account the climatic conditions and availability of water in streams. Once the start of distribution is finalized, the quantity of water is assessed and the timetable for water distribution is set according to predefined water rights. The water distribution timetable is shared with households and displayed in mosques to ensure transparency.

Under this system of governance, villages located at the water source use water during the day, while villages located downstream receive water after sun down. For instance, the village of Drasun (a sub-village of Warijun) receives water at night throughout the summer, while people upstream in Saht use water during the day. Similarly, in Kushum, up until July the water comes to the lower parts of the village, but from July to September it is only used in the upper parts of the village because the whole population moves upstream for the summer. When discussing the reason for such distribution, the study team was informed that agricultural land in the upper area is steeper and cannot be watered at night. Similarly, there are more chances for water evaporation during the day, so to avoid loss of water the lower villages are given water at night. The indigenous water governance system has ensured access to water and was found to be an effective way of managing the meagre water resources in the study areas.

Modern system

The modern system of water governance in Chitral is a modified version of the indigenous system with a formal institutional structure in the form of village and cluster organizations (Figure 2). The basic principles of resource management are the same as for the indigenous system. The main difference is the scope of intervention: village and cluster organizations are not limited to managing water, but are also responsible for other development

Figure 2: Hierarchy of the modern system of community-based water governance in Chitral



activities. This system of governance focuses on exploring new avenues for improving the resource base as well as the management of available resources.

The modern system emerged out of participatory development interventions by different NGOs, such as the Aga Khan Rural Support Programme (AKRSP), in the mid-1980s. Communities were mobilized to form village organizations to identify, implement, and manage development interventions in their community. These village organizations became the basis for the development of the modern system of water governance in the region.

The modern system of governance exists alongside the indigenous system in Mulkhov and is based on indigenous knowledge and the traditional water distribution system. Thus, once the community became organized into village organizations and a cluster organization, the transition to the modern system was quite smooth. The successful transition to the new system was largely facilitated by NGOs, which focused on reorganizing the traditional gram system into the new system with village organizations. The modern system's clearly defined water rights have been another factor in its success. The modern system addresses some of the inherent weaknesses of the indigenous system, improving the management and efficiency of water distribution and use.

Under the modern system, the management and distribution of water resources is carried out by a cluster organization consisting of one or two representatives from each member village organization, which are then responsible for ensuring the supply of water to member households. Members of the village organizations appoint a representative by consensus to implement the water governance system in the villages. When members of the village organizations need water they discuss it with their representative and call a meeting of the entire cluster to set the date to start distribution or repair the irrigation channel.

In the study area, three village organizations (Warijun, Drasun, and Kundar) formed a cluster organization, which constructed a siphon irrigation system in collaboration with governmental and non-governmental organizations.

The project was started in the 1990s with the financial support of AKRSP in Chitral. The organization also secured financing for the project from the Chitral Area Development Programme and Members of Parliament from Chitral. The first phase of the project was completed in 2000. Later, with the financial support of the Sarhad Rural Support Programme, the siphon irrigation project was extended to the village of Kundar in Mulkhow. The community also contributed to the project financially through membership registration fees paid to village organizations.

Before the construction of the siphon irrigation system the members of the village organizations at the cluster level formulated bylaws for the utilization and management of water and the maintenance and extension of the irrigation channel. The channel is repaired after winter and each household is bound to participate in the repair work. Contributions can be in the form of labour or cash and a person with more land must contribute more than a person with less land. Water-related conflicts are resolved by the appointees of the cluster organization.

Only members of village organizations are eligible to receive water. Water distribution is based on the participation of members in maintenance work. For water to be allocated to a household, it is mandatory for it to take part in the maintenance process. The division of water between the three villages is also based on the participation of individuals from each village.

Once maintenance work is complete, the committee records the number of days contributed by each household and village to determine water allocation. For instance, if the maintenance work is completed in 10 days and the allocation of time for one day is 10 minutes then a household that contributed labour for 10 days would receive 100 minutes of water. This method applies to all participating households. The more time that a household contributes in maintenance work, the more water they will receive. Similarly, a village with more active participation in repair and maintenance work receives more water than other villages.

In addition, special arrangements, called 'ponogh', are in place for households located at the tail end of the irrigation system to compensate for the time taken for the water to reach them. In order to maintain transparency and avoid conflict, proper records are kept of all maintenance work at the cluster level and anyone can check their individual or village contribution at anytime. This irrigation system is a prime example of the modern system of management working well and addressing the needs of the community.

Government-managed water governance

For the purpose of this study, irrigation channels constructed by the Irrigation Department were studied to understand government-managed systems. The government-managed water governance system is led entirely by government officials working in the Chitral area. The Irrigation Department is responsible for repairing and maintaining the channel and collects revenue from the beneficiary households according to the crop variety being cultivated.

Maintenance and de-silting is carried out once a year. After a disaster, the community generally undertakes the repair work rather than wait for the Irrigation Department to make repairs, which are subject to delays that leave greater chance of crop failure. Biannual fees are charged by the Irrigation Department for services ranging from Pakistani rupee (PKR) 200 to 2,000. Two people are deputed to look after the regular monitoring and maintenance of the channel.

The government-managed water governance structure in Chitral is complex and confusing as water management is carried by a number of government institutions and department with overlapping responsibilities. Although the Irrigation Department is responsible for improving access to water through the development and management of water infrastructure, other government departments are also involved, including the Agricultural Department and Tehsil Municipal Administration Department.

Under the government-managed system, distribution of water is the sole responsibility of the Irrigation Department. In government-managed channels, water should discharge equally at all outlets from head to tail and everyone should receive an equal share on the basis of the land serviced by the channel. To ensure proper distribution, the government appoints someone to manage the channel; however, because of a lack of proper outlets and exclusion within the community, water is divided inappropriately among the people, which is a source of conflict. Initially,

water in Danin was distributed on an equal basis to 14 different outlets. However, because of continuous water theft, water is now distributed on a rotational basis. Each landholder receives water in turn, which results in large gaps between the days in which water is received; in summer there are regularly 11 days between turns.

In addition, land serviced by these channels has been divided into three categories: orchards, crop lands, and forest areas. The amount of revenue collected is based on these categories; for example, the fees collected for forest areas is more than for orchards, which is more than for farm lands.

Comparison of water governance systems

In this section, the three types of governance systems in Chitral (indigenous, modern, and government-managed) are compared in terms of how they operate (Table 3) and their characteristics of good governance (participation, accountability, transparency, flexibility, and equity) for an in-depth understanding of how water management in the district works (Table 4).

Based on comparative analysis, the modern water governance system has resulted in the better management and distribution of water resources. In community-based water governance, the proper allocation of rights and inclusion of all stakeholders has resulted in greater sustainability, which is less evident in government-managed systems.

In comparison to government-managed water governance systems, indigenous and modern systems ensure greater community participation because rights are clearly explained and communities have full understanding of the system. In the community-based system, accountability is ensured at all stages of operation and a majority of the community members are involved in the decision making process, which builds ownership and trust in the system. The modern system is also more flexible and enables communities to adapt to a changing water situation.

Table 3: Comparison of water governance systems

	Community-based		Government-managed
	Indigenous	Modern	
Structure	Informal	Formal	Formal and complex
Governance	Community	Community	Government
Inclusion of all stakeholders	Yes	Yes	No
Level of community participation	Maximum community participation	Communities participate through village organizations and cluster organizations	No community participation
How the system works	People work as a part of social activities	Well-guided principles in place for implementing the systems	Government follows its own procedures as per annual development plan
Method of channel maintenance	Everyone participates without referencing how much benefit is received	Maximum participation as per share and land area	Government is responsible for maintenance
Water allocation	Depending on predefined water rights	Depending on membership in local village organization and participation in maintenance work	Depending on land size
Flexibility of the system	Not changeable	Changing with people's needs	Predefined by government and not changeable
Dispute resolution	No disputes	Resolved by committees	Government responsible for resolving disputes
Source of potential influence	Not influenced	Influenced by a certain section of the population	Politically motivated influence
Management	Through traditional system of gram	Through focal persons nominated by village organizations	By concerned government employees and contractors
Ownership	Owned by a defined group who have usufruct rights	Owned by all people whose land falls under the system	Owned by the government

Table 4: Good characteristics of water governance systems

	Community-based		Government-managed
	Indigenous	Modern	
Participation	<ul style="list-style-type: none"> ■ All beneficiary households are involved in the process of decision making through the 'gram', an indigenous unit of social organization. 	<ul style="list-style-type: none"> ■ Cluster organizations/village organizations are involved in all decision making. 	<ul style="list-style-type: none"> ■ Communities have no role or only token representation in decision making.
Transparency	<ul style="list-style-type: none"> ■ All water resource management and distribution-related rules and regulations and decisions are taken collectively and shared with the beneficiaries. 	<ul style="list-style-type: none"> ■ Decisions on water resource management and distribution-related rules and regulations are taken collectively and shared with the beneficiaries through the cluster organization and village organizations. 	<ul style="list-style-type: none"> ■ Water resource management and distribution-related decisions and utilization of funds are not shared with communities.
Accountability	<ul style="list-style-type: none"> ■ The accountability of beneficiary households is ensured through their role in the maintenance of the water system. ■ Everyone has predefined rights in the distribution of water. In the case of noncompliance, concerned people are convicted and replacements nominated to ensure efficient distribution. 	<ul style="list-style-type: none"> ■ Maintenance is ensured as it is linked to the allocation of water rights, which is based on the extent of participation by member households. ■ Member households are allocated water according to their contribution to maintenance works. This is ensured by local communities making someone responsible for the distribution of water resources. 	<ul style="list-style-type: none"> ■ Maintenance work is done through regular contractors who are not accountable to local communities. ■ A nominated person is accountable only to the relevant government department.
Flexibility	<ul style="list-style-type: none"> ■ Water rights are fixed among users. ■ In maintenance works, the rules are relaxed for women-headed households. 	<ul style="list-style-type: none"> ■ Water rights are changeable according to community participation. ■ Local communities at the village level relax conditions by providing water to women-headed households that are not able to participate in maintenance work. 	<ul style="list-style-type: none"> ■ Water rights are predefined by the Government and not changeable. ■ No consideration is given to women-headed households.
Equity	<ul style="list-style-type: none"> ■ The system does not ensure equity as some people have more rights despite equal participation in maintenance works. ■ Both small and large landowners have to contribute equally during the maintenance and construction work. ■ The water allocated to villages is not equitable. During longer days, upper riparian areas receive water for longer periods; during shorter days, lower riparian areas receive water for less time. 	<ul style="list-style-type: none"> ■ Everyone participates in maintenance as per their water requirement. People with more land have to contribute correspondingly in labour, cash, or kind. The level of contribution is the basis for the amount of water allocated. ■ An extra hour of water is given to end users to compensate for evaporation and seepage losses to ensure equity in the allocation system. 	<ul style="list-style-type: none"> ■ Even though the distribution of water is equitable the community is unable to benefit optimally because there is a lack of proper monitoring and enforcement.

Strengths and weaknesses of the community-based system

Adaptation Factors

This study found that the community-based system is still firmly in operation in Chitral and is managing water more effectively than the government-managed system, resulting in better adaptation to water stress. This section analyses the enabling and limiting factors of the community-based system.

Enabling factors

Predefined usufruct rights. The existence of predefined usufruct rights is one of the key factors that has ensured the survival of the indigenous/modern system of water management in Mulkhow. The rights of different clans and villages are clearly defined and known to all stakeholders. This characteristic of the community-based management system has ensured its transparency and sustainability.

Sense of ownership. The community-based management system ensures the participation of all key stakeholders in the process, which has fostered a sense of ownership among the community. The community also has a sense of unity and shared responsibility. Local people are well aware of the customary laws that govern the system, which reduces conflict over water during times of water stress.

Strong social capital. The traditional system of 'gram' has helped to build strong social capital and an element of mutual trust among community members. Mutual trust is also evident from the fact that rules and regulations laid down under the community-based system are unwritten and have been practised for centuries. The pooling of water, collective management of water resources, and distribution of water are evidence of this strong social capital.

Effective local institutions. Local institutions (grams, village organizations, and cluster organizations) play an active role in the unity of the local communities and effectiveness of local water governance in Mulkhow. These institutions ensure community participation and inclusion to meet the needs of their members. The mon system of collective responsibility under gram and the bylaws of village organizations and cluster organizations are ways of engaging every household and beneficiary in the maintenance and repair of irrigation infrastructure. Grams, village organizations, and cluster organizations facilitate the dispersal of information about the indigenous and modern system through meetings and information sharing.

Efficient management of water resources. In the indigenous water governance system the appointment of a mirzhoi and the system of sorogh have ensured the efficient management of water resources in the Mulkhow for centuries. This system not only ensures the accessibility of water at the right time for water users, but also reduces the risk of conflict over water resources through regular monitoring and the equal distribution of water among users.

Limited water availability. Mulkhow has always been vulnerable to drought because of low levels of precipitation (both rain and snow). There is no alternate source of water available to overcome this shortage. Thus, drought and lack of an alternate water source have contributed to the development and survival of the indigenous water governance system.

Limiting factors

Conflict between customary laws and legal procedures. With the emergence of civil courts, disciplinary action under the unwritten customary laws of Chitral is no longer practised. Under modern law, if the community imposes a fine on a person for an offence under customary law the accused person can go to the civil courts and submit a case against the community members. The courts, with the support of the police, can summon the whole community to court as a party to the case. This formal litigation process takes time and money for the community to defend. Hence, it is not feasible for them to apply disciplinary action under customary laws; as a result, customary laws are losing their effectiveness.

Lack of awareness about water conservation. Although the community-based system ensures efficient water distribution, traditional crop production practices are not water efficient. The majority of people raise crops on sloping land, which has resulted in huge water losses. One community member initiated farming on terraces, which was hitherto unknown in the area; his crops were not affected by the severe drought of 2002. There is also a government programme being implemented to foster efficient water use among the people.

Rigidity of indigenous governance system. In the indigenous governance system there is no room for changes in practice as the local people are not ready to forego their rights, especially those who have maximum water use rights. In the lower parts of Mulkhow, the issue of water stress has been tackled through the construction of a siphon irrigation channel, but the practice of indigenous water distribution remains unchanged as right holders are not prepared to withdraw their rights in favour of people who are not reached by the siphoned irrigation water.

Lack of coordination among state institutions. There is no umbrella organization in the area to oversee development. Tehsil municipal administrations work under the district governments, whereas the Irrigation Department, Department of Agricultural Engineering, and Construction and Works Department fall under the authority of provincial governments. This dichotomy in development and development initiatives has eroded the trust of the community in state institutions.

Lack of documentation of rights. The indigenous system of governance does not have a mechanism for documenting water rights, which is a weakness that could lead to conflict among the community.

Water Policy Framework

Despite the fact that water is a major issue in Pakistan, policy making on water-related issues is a relatively new phenomenon. In the absence of proper planning and policies on the part of the government, acute water shortages continue to exist in many parts of Chitral. The state organs responsible for the management of water resources are not well equipped to meet the demands of the growing population. Moreover, the roles and responsibilities of institutions in the water sector often overlap and there is a lack of coordination between them. Little concerted effort is made to achieve the goal of sustainable development. Although sizeable resources have been expended by government and donor agencies for use in the development of water sector infrastructure, such expenditures have not been able to meet people's needs or increasing expectations. This chapter looks at the water policy framework (at the district, provincial, and national level) to determine its ability to strengthen adaptation to water stress in Chitral. The institutional arrangements are examined to identify any bottlenecks in the formulation and implementation of policy, and, finally, policy implementation is analysed to determine if it meets local adaptation needs.

Current water policies

Water is a provincial subject in the Constitution of Pakistan. However, the federal government also has a responsibility to develop policies for the sustainable development of water resources at the national level.

Draft National Water Policy

The draft National Water Policy has been developed in line with Pakistan's National Water Vision, which is based on the World Water Vision of the World Water Council. The Pakistan water partnership proposed the Water Vision for 2025 and followed it up with the Framework For Action, which was a forerunner to the 2005 Draft National Water Policy. Up until 2005, there was no separate water policy in Pakistan; instead water was dealt with as a part of the policies of other sectors.

The Preamble to the 2005 draft National Water Policy notes that by 2025 the population of Pakistan will increase by almost 50 per cent, with proportionate increases in the demand for water. The policy places emphasis on the need for efficient water management, equitable distribution of water, a reversal of the trend of decreasing water resources, effective drainage interventions, improved flood control measures, effective water control and protection measures, and institutional reforms to make the management of organizations more dynamic and responsive. It specifies that national water resource development and management should be undertaken in a clearly outlined, holistic, and sustainable manner to meet national development goals and protect the environment.

The guiding principles of the draft National Water Policy are as follows:

- Planning, development, and management of specific water resources should be decentralized to an appropriate level responding to basin boundaries.
- Delivery of specific water services should be delegated to autonomous and accountable public, private, or cooperative agencies providing measured water services in a defined geographical area to their customers and/or members for an appropriate fee.
- Water use in society should be sustainable – with incentives, regulatory controls, and public education promoting economic efficiency, conservation of water resources, and protection of the environment – with a transparent policy framework.

- Shared water resources within and between nations should be allocated efficiently for the mutual benefit of all riparian users.
- Water sector activities should be participatory and consultative at each level, leading to commitment by stakeholders and action that is socially acceptable.
- Successful water sector reform requires a commitment to sustained capacity building, monitoring, evaluation, research, and learning at all levels to respond effectively to changing needs at the national, basin, project, service entity, and community level.

National Drinking Water Policy

Access to safe drinking water is a basic human right and it is the responsibility of the state to ensure its provision to all citizens. To fulfil this commitment, the Ministry of Environment, in line with the provisions of the National Environment Policy and Water Vision 2025 formulated the National Drinking Water Policy. The main purpose of the policy is to improve the quality of life of the people of Pakistan by reducing the incidence of death and illness caused by waterborne diseases by ensuring the provision of adequate safe drinking water to the entire population at an affordable cost and in an equitable, efficient, and sustainable manner. The guiding principles of the policy are as follows:

- Access to safe drinking water is a basic human right of every citizen and it is the responsibility of the Government of Pakistan to ensure its provision to all citizens.
- Water allocation for drinking purposes will be given priority over other uses.
- In order to ensure equitable access, special attention will be given to removing the existing disparities in coverage of safe drinking water and addressing the needs of the poor and vulnerable.
- Recognizing the fact that women are the main providers of domestic water supply and maintainers of a hygienic household environment, their participation in planning, implementation, monitoring, operating, and maintaining water supply systems will be ensured.
- Responsibilities and resources will be delegated to local authorities to enable them to discharge their assigned functions with regards to the provision of safe water supply in accordance with local bodies' legislation.

National Environment Policy

The National Environment Policy has been developed to protect, conserve, and restore Pakistan's environment in order to improve the quality of life of its citizens through sustainable development. The policy provides a framework for addressing the environmental issues Pakistan is facing. It also provides direction for addressing the cross-sectoral and underlying causes of environmental degradation.

The National Environmental Policy, while recognizing the goals and objectives of the National Conservation Strategy, National Environmental Action Plan, and other environmental water policies, strategies, and action plans, provides a broad framework for the federal government, federally administered

National Water Vision for Pakistan

By 2025, Pakistan should have adequate water available through conservation, development and good governance. Water supplies should be of good quality, equitably distributed and meet the needs of all users through an efficient and integrated management, institutional and legal system that would ensure sustainable utilization of water resources and support economic and social development with due consideration to the environment, quality of life and economic value of resources, ability to pay and participation of all stakeholders.

territories, and local governments to address environmental concerns and ensure the effective management of their environmental resources. The policy addresses the issue of clean drinking water and makes recommendations for sustainable access to safe water supply and the effective management and conservation of the country's water resources as follows:

- Develop a legal and policy framework for the promotion of safe drinking water in Pakistan.
- Increase the coverage of water supply and water treatment facilities.
- Establish a water quality monitoring and surveillance system.
- Make the installation of water treatment plants an integral component of all drinking water supply schemes.
- Promote low-cost water treatment technologies at the community and household levels.
- Promote appropriate technologies for rain water harvesting in rural as well as urban areas.
- Encourage artificial recharge of groundwater in arid and semi-arid areas.
- Promote metering of water consumption to discourage the indiscriminate use of water for industrial and municipal purposes.
- Enact the Water Conservation Act and relevant standards to foster water conservation.
- Promote integrated watershed management.
- Monitor sustained freshwater flows into marine ecosystems.
- Establish standards for the classification of surface water bodies.
- Launch phased programmes for the cleanup and gradual upgrading of the quality of water bodies.

National Sanitation Policy

Sanitation is a basic necessity and contributes to human dignity and quality of life; it is also a prerequisite for success in the fight against poverty, hunger, child deaths, and gender inequality. Proper sanitation involves the promotion of health through the safe disposal of excrement and impacts privacy, dignity, cleanliness, and a healthy environment. Recognizing deficiencies in the provision of proper sanitation services in Pakistan, the Ministry of Environment formulated the National Sanitation Policy of Pakistan to meet its commitments under the Millennium Development Goals and Dhaka Declaration of 2002. The purpose of this policy is to provide adequate sanitation coverage to improve the quality of life of people and provide the physical environment necessary for a healthy life. The guiding principles of the policy are as follows:

- The promotion of health and hygiene – fundamental human rights which cannot be achieved without proper and safe sanitation.
- The achievement of sustainable development by:
 - building on what exists, mobilizing local resources and avoiding foreign loans, developing programmes that can be implemented with available resources, and by enhancing the capacities of institutions and communities;
 - understanding, accepting, and supporting the roles that communities, NGOs, and formal and informal sectors play in sanitation provision/coverage;
 - developing and using appropriate, low cost, easy, and cost-effective technologies that are viable, affordable, and locally appropriate, based on indigenous knowledge and local skills;
 - accepting the component sharing and total sanitation models for all government programmes and projects, so as to ensure financial sustainability and community and private sector involvement in the development and subsequent operation and maintenance of sanitation schemes;
 - involving responsible departments and communities in the operation, maintenance, and planning of sanitation schemes; initiating research and pilot projects for developing sustainable models focusing on the safe disposal of liquid and solid waste; and
 - giving priority to the needs of women, children, and the handicapped in all policy, planning, and implementation processes.
- The provision of adequate, appropriate, and hygienically designed toilets for public use will be ensured in all public buildings, restaurants, recreation and amusement areas, community halls, fish harbours, and industries.
- The provision and distribution of sanitation facilities and resources should be equitable between the rich and poor sections of human settlements. Preference shall be given to those areas where the environmental and social impact is greatest.

- Technical designs will be area specific and compatible with the culture and tradition of communities.
- Operation and maintenance costs will be generated at the local level through a combination of affordable user charges.
- Sanitation programmes and projects will be coordinated with city planning, housing, environment, health, education, and socioeconomic policy guidelines, programmes, and projects. Solid and liquid waste will be disposed of in an environmentally sound manner through treatments facilities.

Northwest Frontier Province Agricultural Policy 2005

The provincial economy of Khyber Pakhtunkhwa (formerly NWFP) is based on agriculture, and more than 75 per cent of the rural population depends on agriculture for their survival. Khyber Pakhtunkhwa has a population of more than 20 million people, about 83 per cent of which live in rural areas, exerting tremendous pressure on land resources. The province possesses 10.17 million hectares of land, of which only 2.75 million hectares is cultivable and only 1.8 million hectares is currently cultivated. A large chunk of cultivated land is rain fed (49 per cent); as a result, 94 per cent of farm holdings are less than five hectares, which is a subsistence level.

The plight of the people engaged in agricultural occupations has worsened over time and the incidence of poverty has increased in rural areas. One of the reasons for the dire situation of agriculture is that successive governments have paid little attention to this vital economic sector. During the 1990s, real investment in agriculture was constricted and the operational budget for constructing irrigation infrastructure was as low as 10 per cent of the total budget, which left insufficient funds for managing and operating such infrastructure. The situation is similar for agricultural research and development. Lack of attention from policy makers and little investment in the agricultural sector led to limited growth and development, making the sector unprofitable for farming communities, especially small farmers. An immediate policy response was needed to ameliorate the situation for farming communities as well as the provincial economy. The National Agricultural Policy was developed to address this and focuses on the following:

- food security/self-sufficiency;
- poverty reduction;
- integration and improvement of services delivery system;
- capitalizing on comparative advantages;
- strengthening public-private partnerships;
- participation of farming communities in decision making;
- conservation of water resources;
- providing tax relief; and
- gender mainstreaming.

Institutional arrangements

This section examines institutional arrangements at the national, provincial, and district levels to understand how policy is implemented at the local level (Figure 3).

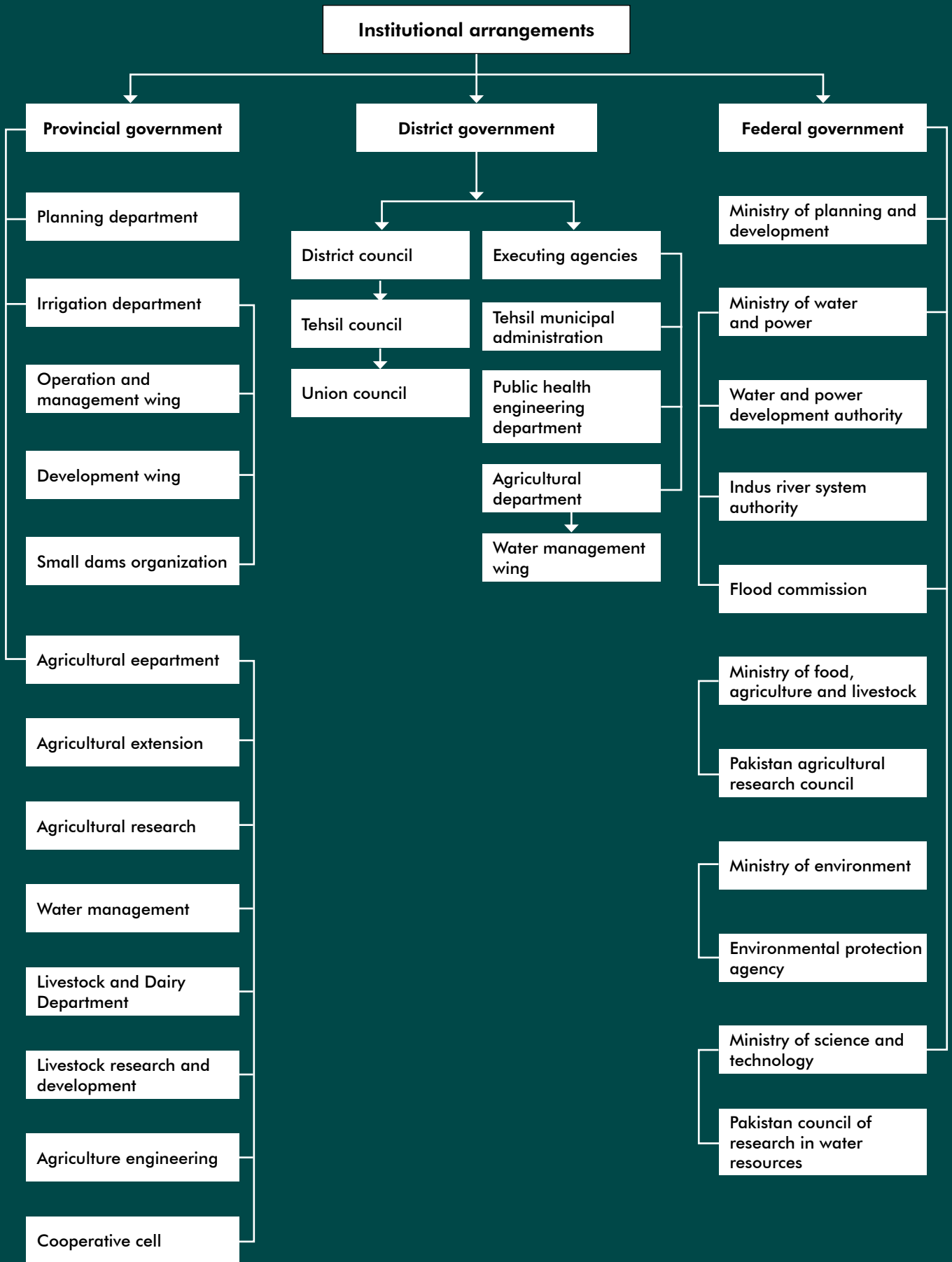
National level

The federal government is responsible for coordination and policy formulation at the national level, which is conducted through the Ministry of Planning and Development. The national distribution of water and the management of multipurpose reservoirs on the Indus and its tributaries is the responsibility of the Ministry of Water and Power. To meet future energy and water requirements, the Ministry of Water and Power formulates plans and arranges financial resources to implement such plans in consultation with the provinces, the Water and Power Development Authority and its successor organizations, and international experts. The Ministry of Environment and

Millennium Development Goal 7: Drinking water and sanitation targets

Halve, by 2015, the proportion of the population without sustainable access to safe drinking water and basic sanitation.

Figure 3: Institutional arrangements for policy making and implementation process



Ministry of Food, Agriculture and Livestock also have policies for drinking water and sanitation and to improve water for agricultural purposes.

The Pakistan Agricultural Research Council under the Ministry of Food, Agriculture and Livestock is the apex agricultural research organization at the national level. Its main objective is to strengthen Pakistan's agricultural research system, which is comprised of federal and provincial components. The council has a separate section for water management, which aims to minimize water losses during farming by introducing new technology. Under the Ministry of Science and Technology, the Council of Research in Water Resources is working to conduct, coordinate, and promote research in all aspects of water resources. These research institutes are coordinating various innovative initiatives in the water sector at national and provincial levels to improve water conditions in the area.

Provincial level

The departments of Planning and Development, Irrigation, and Food and Agriculture deal with policy making and planning for water resources in Khyber Pakhtunkhwa. However, so far, the provincial government has not been able to develop any policy for the sustainable development of water resources.

The Planning and Development Department is the major policy and decision making department in the province, especially in the field of development. It is responsible for the implementation and monitoring of the overall development plans of the province. It plays the most important role in policy making, priority setting for projects, the appraisal of development projects, and their implementation, monitoring, and evaluation. The process of approval is an important activity of the department and involves the compilation of the annual development programme (ADP), allocation of funds, and making the recommendation for approval.

The Department of Irrigation is responsible for the construction and maintenance of irrigation infrastructure including canals and small irrigation channels, provided it receives the allocation of funds in the ADP of the provincial government. The Irrigation Department, in line with the National Water Vision, has developed a business plan for integrated water use. The objective of the plan is to ensure that the water supply is of good quality, equitably distributed, and meets the needs of all users through an efficient management, institutional, and legal system that ensures the sustainable utilization of water resources and supports economic and social development, with due consideration for the environment, quality of life, the economic value of resources, ability to pay, and participation of all stakeholders.

The provincial Agricultural Department is working to reduce water loss during farming. While most of its power was devolved to the district, tehsil, and union levels in 2001, it is still responsible for policy making and planning in relation to agriculture.

District level

After the devolution of power in 2001, the district government has emerged as an important stakeholder in the management of water resources. It has been granted the power to legislate and develop plans and visions through councils established at the district, tehsil, and union levels. Furthermore, some of the provincial departments have been decentralized to the district level. These departments are placed financially and administratively under the control of the district government. At the provincial level, they remain responsible for policy making and planning.

The Public Health Engineering Department is responsible for providing basic water facilities to local communities. Basic civic facilities are arranged by the tehsil municipal administration. The water management wing of the Agricultural Department is implementing various initiatives to reduce water loss by improving water courses in the area. Apart from that, various NGOs such as AKRSP, Sarhad Rural Support Programme, and the Water and Sanitation Extension Programme play an important role in reducing water stress in the area.

Public-sector implementation mechanism

This section looks at the implementation mechanism for development interventions by public-sector organizations to understand to what extent the current set up incorporates policy in the development process. Generally, project

implementation passes through four stages: fund allocation, project identification, implementation, and maintenance.

Fund allocation

The federal government allocates funds to the provinces at the direction of the National Finance Commission, which determines the percentage share of each of the four provinces. The distribution of resources between provincial and local governments and between different tiers of local government is determined by the Provincial Financial Commission. In addition, both the federal and provincial governments directly grant funds to the districts for development purposes through elected members of the provincial and national assemblies (Figure 4). The budget is then allocated to different schemes at the recommendation of these elected members.

For ADPs, the provincial government directly allocates funds each year. The usual mode of preparation of these schemes, especially for infrastructure development, is through composite schedules rates, whereby the budget is prepared for projects. For difficult areas like Chitral, 15 per cent of the total cost is added to the project cost. Depending on the area, the executing agency may adjust this rate. For a project that is going to be implemented by the project committee, 15 per cent of the amount provided by the community (which is provided in kind) is added to the project.

Project identification

The identification of projects is based on the availability of funds. Funds are first allocated to elected representatives, then projects identified by the local people, which are then verified by elected representatives. Project management committees also identify small-scale projects (defined as projects costing less than half a million PKR), which are funded from provincial and district development funds.

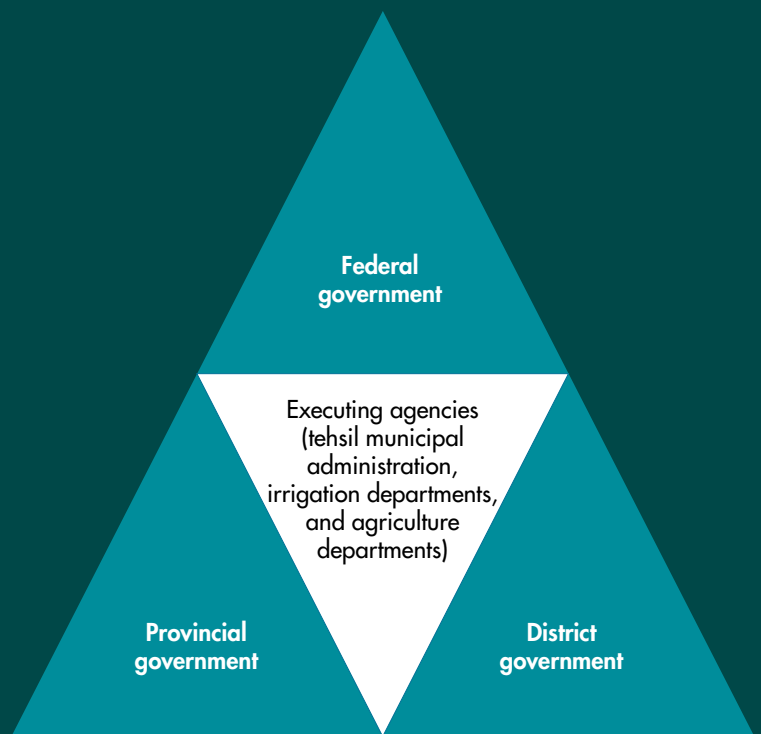
In the case of federal government funds and provincial or district funds involving more than half a million PKR, the elected representatives identify where funds should be used. The executing agencies then carry out a feasibility study before implementation.

For ADPs, the provincial government first assigns schemes to different sectors and the executing agency identifies the project keeping in mind the needs of the area and prepares a feasibility report. The project is then put up to the Planning and Development Department for final approval by the relevant provincial department. These projects become part of the province's annual development programme, for which funds are allocated annually by the provincial government.

Implementation

Projects are either implemented through contractors or a project committee. Projects funded by the federal government are implemented through contractors, as are district and provincial government projects with a budget of more than half a million PKR. The government has established qualifying criteria depending on the nature of the work, which the contractor must fulfil to participate in the bidding process. The contractor with the lowest bid

Figure 4: Fund allocation mechanism



is awarded the contract, but the cost can't be less than 30 per cent of the total advertised cost. The successful contractor then initiates work in the project area.

Projects of the district or provincial government for less than half million PKR are normally implemented through a project management committee. The members of the project management committee are recommended by members of the Provincial Assembly and councils (Nazim) before implementation of the project. During construction, a government engineer oversees progress to ensure the quality of the work.

Maintenance

For large projects, such as channel construction, maintenance is undertaken by the Irrigation Department, which appoints one person to distribute water on an equitable basis among communities who is reimbursed by the government exchequer. The government also taxes the people benefiting from such projects on the basis of crop type. The Irrigation Department carries out the de-siltation and rehabilitation of existing channels annually. No other organization, government or non-governmental, carries out any intervention in these channels without formal approval from the Irrigation Department.

For small projects undertaken by project management committees, local people are responsible for the maintenance of the project after its completion and sign terms of agreement with the government before initiation of the project. Drinking water supply schemes are managed by nominating one person to maintain and manage the project in the area.

Water sector investment

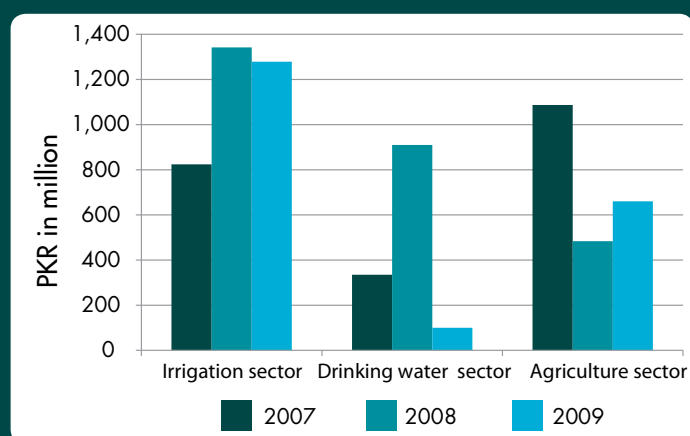
The level of investment in the water sector is an important determinant of how well policies are implemented at the local level. Government interventions in the water sector in Pakistan are undertaken either as a part of ADPs or using funds directly allocated by the district, provincial, or federal government. This section looks at the total amount of investment in water at the provincial level (Khyber Pakhtunkhwa Province) and district level (Chitral District) to determine total spending in this sector. To determine investment, ADPs are analysed at the provincial level and the yearly budgets of different water sector organizations at the district level.

Provincial level: The total financial allocation by the government of Khyber Pakhtunkhwa for the years 2007 to 2009 was PKR 7,840 million for irrigation, drinking water, and agriculture combined (Figure 5). Of this, PKR 3,335 million was used for feasibility studies and designing of small dams, installation and improvement of irrigation tube wells, improvement and construction of irrigation channels, flood protection works, introduction of dug wells, and construction of small ponds in water scarce areas.

To improve drinking water and sanitation facilities, PKR 2,245 million was allocated to lay out new water supply schemes, extend existing water supply schemes, and install tube wells, and for the rehabilitation of sanitation and drainage in different cities in Khyber Pakhtunkhwa. PKR 2,151 million was earmarked for the installation of 500 dug wells for irrigation under the component of agricultural mechanization in water scarce areas of the province. Resource allocation through the province's annual development programmes appears to be erratic.

District level: In Chitral District, a total of PKR 206 million was spent by government and non-government organizations on the water sector in the three years from 2008 to 2010. The funds were

Figure 5: Total budget allocation to the water sector in Khyber Pakhtunkhwa (2007–2009)



Source: Provincial Annual Development Programme for Khyber Pakhtunkhwa Province (2007, 2008, 2009)

used for drinking water, lining water courses, channel rehabilitation, and the construction of channels, among other things.

In relation to drinking water, the Public Health Engineering Department used PKR 126 million (62 per cent) to improve drinking water access. Of this, projects worth PKR 51 million (40 per cent) were initiated by programmes with direct funding from the federal government such as the Khushal Pakistan and People Works, and the remainder (60 per cent) were part of the regular provincial annual development programmes. According to the statistics of the Public Health Engineering Department, 67 per cent of households have access to piped drinking facilities in Chitral.

The Water Management Wing of the Chitral Agricultural Department invested PKR 51 million (37 per cent) on the improvement of water courses in the district to reduce of water loss during farming as a part of its National Programmes for Improvement of Water Courses. According to the Agricultural Department, more than 50 per cent of irrigation water is lost in the water courses before entering farm lands. The AKRSP and other NGOs also took part in the construction and rehabilitation of channels and drinking water facilities during this time. The AKRSP spent PKR 29.5 million on the construction and rehabilitation of irrigation channels and drinking water supply in Chitral. Unfortunately, the district government was not able to initiate any schemes on its own during this period, despite the fact that departmental responsibility has been devolved to the district level since 2001.

Figure 6 illustrates the total allocation to the water sector in Chitral by different organizations.

Analysis of policy implementation

The study found a mismatch between the policies and programmes developed at the provincial and federal levels and local adaptation needs. The two main causes of this mismatch, as identified in the study, are lack of proper planning and operational mechanisms and ineffective implementation practices (Figure 7).

Other causes include rigid operating procedures, lack of community participation, a high level of political influence, irregular financial allocations, and lack of sustainability of interventions. As a result of this mismatch, the current water policies of the governments of Pakistan and Khyber Pakhtunkhwa Province have not contributed to strengthening local adaptation capacity to water stress in Chitral.

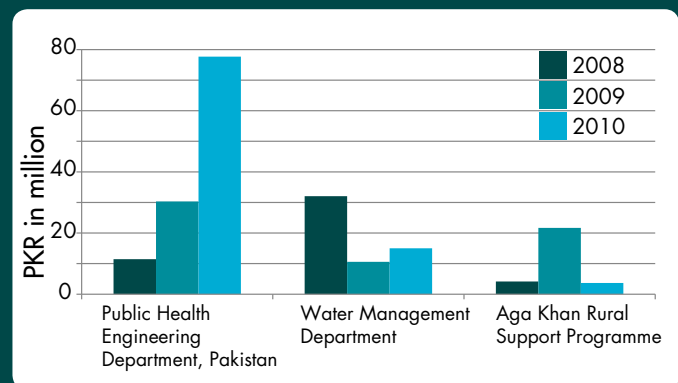
Lack of proper adaptive planning: Lack of proper adaptive planning at the local level is the main reason for the failure of current water policies to strengthen local adaptive capacities. Policy guidelines, although available, are broad and there is no implementation strategy to translate them at the local level. Sufficient knowledge of policy is also generally lacking among those involved in planning and implementation at the local level.

Discussions with respondents from public-sector organizations revealed that a very small proportion of representatives of implementing agencies have an understanding of water sector policies. The majority of respondents were unaware of national-level water policies. In addition, the respondents who were aware of such policies said that they did not understand how to implement these broad guidelines at the local level.

Discussions with representatives of public-sector water agencies revealed that these state institutions have no short or long-term plans or guidelines for implementing national policy for the improvement of water conditions. In addition, there is no water sector profile for Chitral District, which is the basis of effective planning.

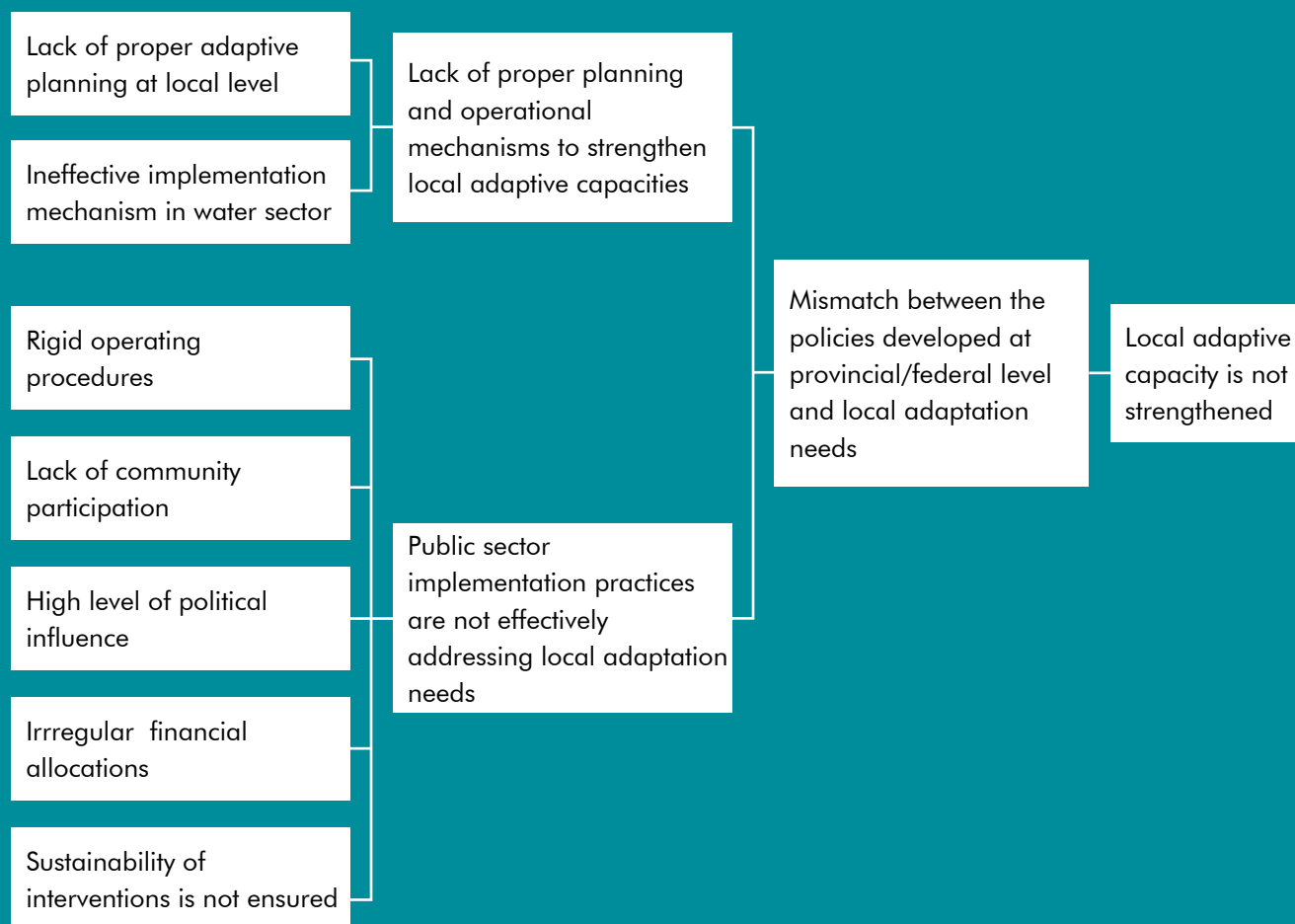
Although the government of Chitral, with the technical and financial support of the International Union for Conservation of Nature (IUCN), has developed an Integrated Development Vision, which contains an in-depth

Figure 6: Total allocation by different organizations in water sector in Chitral (2008–2010)



Source: Field research

Figure 7: Cause and effect analysis of policy implementation



analysis of water issues and broad guidelines for future water sector development interventions, no action has been taken to implement the guidelines at the field level. Therefore, planning is not in line with the actual needs of the people of Chitral, especially with the demands exerted by the growing population.

Ineffective implementation: Ineffective implementation arising from complex institutional arrangements, the absence of an effective coordination mechanism, and politically influenced and irregular financial allocations and planning process are hampering local adaptive capacity. Lack of a proper mechanism for the prioritization of issues has prolonged the resolution of community problems. Issues are generally not prioritized according to the needs of the people or looking the overall impact on society. Nor is there any state mechanism for improving the water situation in the long term. As a result, development interventions are allotted to different areas in an erratic fashion. Priority is given to the distribution of funds rather than solving water issues. As a result, local-level problems continue, even after significant levels of investment.

District-level development funds are generally allocated equally among all 24 Union Councils in Chitral on an annual basis. A similar method is practised in water sector management projects. This method of fund allocation is not capable of prioritizing issues or taking into account the needs of the people and has deprived the most deserving and vulnerable areas of targeted interventions in the water sector, making communities more vulnerable to water stress.

Rigid operating procedures: Rigid operating procedures have limited the possibility of developing partnerships within government departments or with non-governmental organizations to jointly address local adaptation needs. In Chitral district, various organizations at different levels of the chain of command and with different amounts of control are operating in the water sector. In the public sector, both provincial departments (Irrigation Department) and

devolved departments (Agriculture Department, Water Management Department and tehsil municipal administrations) are operating with the same mandate. Even executing agencies that have been devolved to the district government are mostly implementing development programmes funded by the federal or provincial government, without consulting with the district government. In addition, there is no mechanism to include NGOs, which are investing a great deal of resources in improving livelihoods through strengthening water infrastructure. Activities are being replicated by different organizations and concentrated in the same areas because of poor coordination.

In many cases, the channels laid down by the Irrigation Department have actually reduced the water supply to local communities, despite being constructed as per design. Analysis of the problem reveals that these projects failed to incorporate any provision for on-farm water management techniques as this falls within the domain of the Agricultural Department. As a result, the majority of government-managed channels are developing such problems. Similarly, the tehsil municipal administrations are implementing projects in diverse sectors without considering the expertise or activities of other departments, resulting in the failure of many projects.

Lack of community participation: Lack of community participation is a key characteristic of the public-sector working pattern in Pakistan. Communities have limited or no involvement in the identification and implementation of projects. The identification of interventions mainly lies with the political representatives and the people associated with them, and such representatives incorporate the views of only a select group of people ignoring the masses. Compounding this, development interventions are implemented through public contractors who are accountable only to the department hiring them.

Recently, there have been initiatives to involve the community through project management committees and water user committees under the Tamir Sarhad Programme and On-Farm Water Management Programme of the provincial government. But this positive shift at the policy level has been negatively exploited by political representatives. Under the Tamir Sarhad Programme, members of the Provincial Assembly have been given authority to nominate and recommend people to the project management committee; unfortunately, this power has become a way for these members to benefit their associates without any real participation by beneficiaries in the implementation process. The development funds allocated to elected representatives are being used by them without any prioritization and without the true participation of communities.

Water infrastructure development interventions undertaken by the On-Farm Water Management Programme are also being influenced by leaders and elected representatives as there are no defined criteria for community participation. Respondents said that community participation in the majority of water management interventions was merely symbolic. The water users association (association of beneficiary farmers responsible for the implementation and maintenance of the irrigation projects) is not an actual beneficiary of the projects and, therefore, does not pay much attention to the quality of work, resulting in a lack of ownership by the communities.

In relation to large projects, community views are considered at the identification stage, but community participation at the implementation stage is completely absent. Even the people directly benefitting from these projects have no say in project implementation. The monitoring of the project is done entirely by government officials. The negligible involvement of communities has resulted in limited support for the implementation of projects, contributing to the vulnerability of people to climate change, water stress, and other issues.

High level of political influence: A high level of political influence and interference is present in all processes in public-sector interventions including financial matters, planning, and implementation. Elected representatives at the local and national/provincial levels have an enormous say in the allocation of finances to interventions. Financial allocations are made more to garner support from people than to resolve the problems of the people.

Members of the National Assembly and members of the Provincial Assembly allocate finances to a large number of petty schemes that have no appreciable impact on the community. Allocations through the annual development programme are less than the direct packages offered by the government because they provide elected members with an opportunity to benefit people of interest to them. Elected representatives distribute funds without considering the actual needs of the people or ongoing projects in the area. This has affected the credibility of public-sector organizations and hampered the performance of professionals. The disbursement of development funds is

dependent on national and provincial elected representatives, whereas line agencies are mere conduits for the transfer of funds. Fund allocations do not follow the priority needs of the communities. As a result the majority of development interventions end in failure. Lack of vision and motivation among the political leadership and relevant organizations has hindered the development of the water sector and increased the stress that local people are under.

Irregular financial allocations: Irregular financial allocations are constraining the initiation of schemes by public-sector organizations. Most of the budget received by public-sector organizations is earmarked for provincial projects or allocated to elected representatives for distribution. Public-sector organizations have very limited budget for planning and implementing projects on their own. Thus, they have little say in the planning of projects and allocation of funds. Explaining the point, a representative of the tehsil municipal administration revealed that the annual funds received would be barely enough to cover management costs and were insufficient to plan for the development of water sector. Hence, the credibility of these governmental organizations is diminishing as they are working only as a medium for transferring funds from the government exchequer to the focus areas of the elected representatives. This practice is preventing them from carrying out their roles and responsibilities as elected representatives. On the other hand, elected representatives are free to hand out funds to gain popularity among the people rather than targeting the real needs of communities, compromising the sustainable development of the water sector.

Lack of sustainability: The sustainability of interventions is not ensured because local expertise is not acknowledged. The local communities have well-established and effective mechanisms for the management of water resources, which are based on local knowledge and systems. For example, in water user associations and project implementation committees were developed many areas of Mulkhow regardless of existing local institutions such as grams. This has not only resulted in the poor sustainability of interventions, it has also created conflict within communities in some areas. Schemes constructed by contractors are not sustainable as they lack maintenance and repair arrangements after completion. In comparison, irrigation channels constructed by local people are more efficient and easy to manage as they are community owned.

Conclusion and Recommendations

Effective water governance plays a key role in shaping local adaptive capacity to water stress in Chitral. Based on local knowledge, community-based institutions in the study area have been effectively addressing water shortages and other issues by ensuring the judicious management and utilization of water resources. Despite this, the role of these community-based institutions in shaping local adaptation has not been recognized by public-sector organizations.

Furthermore, while water policies exist at the national and provincial levels, there is currently no way to translate local adaptation needs into planning and policy. Failure to consider local needs (and knowledge) is making development interventions less effective. Lack of proper implementation strategies and short and long-term action plans at the local level is also hampering the ability of local communities to adapt to water stress. Poor institutional arrangements in the public sector together with ill-defined roles and responsibilities have limited the local adaptive capacity. Public-sector practices have marginalized traditional local institutions making communities more vulnerable to the risks emerging from climate change including water stress.

The recommendations in this section are aimed at strengthening local adaptive capacity by addressing the issues emerging from the findings of the study.

Recommendation 1: Participatory development of policies

The development of policies for the integrated development of the water sector in Chitral must involve all stakeholders at national, provincial, and district levels. The majority of policies are framed at the national level and, hence, have not been effective in ensuring the sustainable development of the water sector at the grassroots level. In order to address the needs of the people more effectively, communities at the local level should be involved in all stages of the planning process.

Recommendation 2: Effective implementation

An effective implementation strategy must accompany existing national and provincial policies and sectoral guidelines aimed at improving water resources. In the absence of such a strategy, existing policies are not being translated to the local level. Lack of policy implementation plans at the local level has led to the failure of several projects to produce any appreciable impact, despite heavy investment.

Recommendation 3: Recognition of role of community institutions

Recognition of the role played by community institutions, which are the main bodies responsible for managing scarce water resources, is crucial to ensuring the sustainability of any project in Chitral. Although some policy guidelines recognize the importance of community involvement in the development process, local practices have not been able to ensure real community participation. There must be proper coordination with local communities when developing plans for local level interventions.

Recommendation 4: Coordination with all stakeholders

Coordination with all stakeholders involved in integrated water resource management is necessary to incorporate water-related and local expertise in development interventions. All stakeholders should be involved in the process of planning and policy making in the water sector.

Recommendation 5: Enhance capacity of public sector staff

The capacity of public-sector staff should be enhanced to include an understanding of policy dynamics and climate change scenarios when planning and implementing development interventions in Chitral. The capacity of public sector staff should also be built to enable them to plan at the local level without any undue influence.

Recommendation 6: Prioritize sustainable water sector allocations

Sustainable water sector allocations should be prioritized through proper planning and the equitable distribution of resources. Financial allocations should be made through the provincial annual development programme to reduce leakage of funds to non-prioritized areas as a result of political influence. Areas facing acute water shortages should be prioritized when apportioning resources to enhance the adaptive capacity of local communities in the area.

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Acronyms and Abbreviations

ADP Annual development programme

AKRSP Aga Khan Rural Support Programme

NGO Non-government organisation

NWFP North West Frontier Province

PKR Pakistani rupee

Note: The exchange rate at the time of the study was USD 1 = PKR 97.80



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