Water Scarcity, Livelihood & Conflict

Khibar Rassul

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Working for a Sustainable Culture of Peace

In collaboration with:
Cooperation for Peace and Unity (CPAU) works for the promotion of knowledge and awareness of peace, social justice, and human rights as the foundation upon which the nation-building efforts in Afghanistan should be based. Through direct encouragement and participation in active peacebuilding by means of training and educational programs, CPAU hopes to contribute to the creation of a viable alternative to war and violence, as the first step towards building lasting peace.

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Based on its 15 years of field experience, CPAU also uses its community links and networks to undertake various research projects, reflecting the issues of concern to Afghan people directly from the grass-roots level. Through its research department, CPAU seeks to enable effective community feedback on existing interventions between communities and external change agents, and to facilitate the systematic analysis of the relationship between processes and outcomes across a wide range of communities.
Acknowledgements

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Glossary

Aridity: a natural permanent imbalance in the water availability consisting in low average annual precipitation, with high spatial and temporal variability, resulting in overall low moisture and low carrying capacity of the ecosystems.

Drought: a natural but temporary imbalance of water availability, consisting of a persistent lower-than-average precipitation, of uncertain frequency, duration and severity, of unpredictable or difficult to predict occurrence, resulting in diminished water resources availability, and reduced carrying capacity of the ecosystems.

Desertification: a man-induced permanent imbalance in the availability of water, which is combined with damaged soil, inappropriate land use, mining of groundwater, and can result in increased flash flooding, loss of riparian ecosystems and a deterioration of the carrying capacity of the ecosystems.

Shura: A traditional community council of local elders.

Mirab: Local water master.

Water shortage: a human-induced but temporary water imbalance including groundwater and surface waters’ over-exploitation and degraded water quality.
**Acronyms**

ANDS: Afghan National Development Strategy

BCM: Billion Cubic Meters

CPAU: Cooperation for Peace and Unity

CSO: Central Statistics Office

FEWS NET: Famine Early Warning System Network

IMF: International Monitory Fund

MEW: Ministry of Energy and Water

MRRD: Ministry of Rural Rehabilitation and Development

NRVA: National Risk and Vulnerability Assessment

NSP: National Solidarity Programme

UNEP: United Nation Environmental programme

UNESCO: United Nations Educational, Scientific and Cultural Organization

UNFPA: United Nations Population Fund

USDA: United State Department of Agriculture

WB: World Bank
Introduction

Water is a prerequisite for all life on earth; it is a key resource in the biological make up of human beings and all other life forms. Water is also a key resource in human livelihoods around the world. It is a key resource in a variety of economic sectors including power generation, apparel, biotechnology/pharmaceuticals, forest generation, mining, high-tech and agriculture. Water is also a basic necessity for daily human consumption and for household use.

Water is one of Afghanistan’s most critical natural resources and is the key to the health and wellbeing of the Afghan people; it plays a critical role in almost all aspects of Afghan lives. Water is the key resource in the agricultural sector in which 55% of Afghan households are engaged; moreover it employs around 80% of the country’s work force. The agricultural sector uses a disproportionate amount of water, accounting for nearly 95% of water consumption in the country. The important role of agriculture in Afghan livelihoods and the important role of water in agriculture, make water a key resource for Afghan lives. However the importance of water goes beyond the economic realm and into the social and personal lives of the Afghan people. Access to safe drinking water is a prerequisite to a healthy life. In Afghanistan only around 27% of the people have access to safe drinking water. The need to access and share water has also resulted in the creation of social organizations and structures that enable cooperation between people and brings them together. Such cohesion has had a spill-over effect into other important aspects of Afghan social life.

The scarcity of such a fundamental resource will obviously have a noticeable negative impact on society. While in Afghanistan there is sufficient water to supply the whole population with an adequate amount of water, there are regional differences in terms of the amount of water available. This means that some regions, such as the Northern River basin region, are naturally facing water scarcity. In addition there is the issue of man-made water scarcity resulting from deforestation and unequal distribution. Man-made water scarcity is an important issue because as mentioned earlier, the country actually has enough water, which means that if utilized properly, water scarcity would become less of a threat to the Afghan people. If water is not better utilized, the resulting water scarcity will threaten Afghan livelihoods, contribute to migration and internal displacement, the increase of environmental refugees, regional tensions, diminishes agricultural productivity, and threatens food security.

The implications of water scarcity can be very dangerous as it threatens people’s livelihoods and means of survival, potentially resulting in genuine fear and desperation among people. It can also typically results in an increased competition over an increasingly scarce resource. The combination of fear, desperation and competition can naturally lead to conflict and if not dealt with properly it can become violent. Water conflicts are particularly an issue at the local level in Afghanistan.

Water Scarcity
Understanding the concept of water scarcity is simple; it is essentially a supply and demand equation where demand exceeds supply. However the challenge is in understanding the causes of water scarcity and their resulting repercussions. Water scarcity per se’ will have a negative effect on society while the processes leading up to a situation of water scarcity might have negative effects of their own.

**The Supply and Demand Equation: Per Capita Cubic Meters of Water**

Around the world, water has long been seen as a “non-limited natural resource because it was renewed every year in the course of the seasons”\(^8\). Human kind has exploited the water resources of this world without seriously considering the long-term consequences of overexploitation. Water is being misused to the point where it is becoming scarce even in regions with a relatively high level of rainfall\(^9\). Afghanistan is a country facing water scarcity; after decades of war and continuous drought, this is not a surprising fact\(^10\).

However, the understanding of water scarcity goes beyond measuring the level of rainfall in a given year. Water scarcity can be perhaps better understood in per capita terms of the renewable water available in a country per year, an idea pioneered by Malin Falkenberg\(^11\). According to Falkenberg:

<table>
<thead>
<tr>
<th>From</th>
<th>To</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 000</td>
<td>+</td>
<td>Secure</td>
</tr>
<tr>
<td>1666</td>
<td>10 000</td>
<td>Adequate</td>
</tr>
<tr>
<td>1000</td>
<td>1666</td>
<td>Water Stressed</td>
</tr>
<tr>
<td>500</td>
<td>1000</td>
<td>Chronically Water Stressed</td>
</tr>
</tbody>
</table>

In aggregate Afghanistan has an adequate amount of water. The total access to water resources per year is estimated to be 75 Billion Cubic Meters (BCM). An estimated 57 BCM is in the form of surface water resources and an estimated 18 BCM is in the form of underground water resources\(^12\). The overwhelming majority of the surface water made available is through the five major river basins in the country (Amu Darya, Harirod-Murghab, Helmand, Kabul and Northern). According to the latest CSO/UNFPA data, Afghanistan has a population of approximately 24,485,000 people, which would result in a 3,063.1 per capita cubic meters of water\(^13\). Based on this range and the above qualification standards, Afghanistan is well into having adequate amount of water.
However the water made available is poorly divided amongst the population. In Harirod-Murghab and Helmand river basin the people are only getting access to 1,457 cubic meters of water per person and 1,310 cubic meters of water per person respectively. In both cases people in these river basins can be classified as water stressed. People in the Northern river basin only have access to 570 cubic meters of water per person which means it is chronically water stressed.

Water availability is further reduced due to its ineffective utilization. There are a number of reasons for the inefficient utilization of water in Afghanistan. Decades of war have seriously
damaged the infrastructure of the country and caused a breakdown in both traditional and formal legal and management systems\textsuperscript{14}. The seasonal nature of the water availability also makes it difficult to effectively use the water available over the long-run (within a year).

<table>
<thead>
<tr>
<th>Water Source</th>
<th>Estimated Capacity</th>
<th>Estimated Use</th>
<th>Balance (Capacity - Use)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surface Water</td>
<td>57</td>
<td>17</td>
<td>40</td>
</tr>
<tr>
<td>Groundwater</td>
<td>18</td>
<td>3</td>
<td>15</td>
</tr>
<tr>
<td>Total</td>
<td>75</td>
<td>20</td>
<td>55</td>
</tr>
</tbody>
</table>

\textsuperscript{14} Qureshi, 2002

Based on the population data stated above, and the estimated 20 BCM of water used, Afghanistan as an aggregate is using 816 cubic meters of water per capita. This means that the country as an aggregate is chronically water stressed due to its inability to effectively use the water resources available.

Trying to understand water scarcity in terms of cubic meters of renewable water per capita has its merits and its shortfalls. It is a good indicator of how much potential water resources there are available in the country as whole, which can be beneficial in attempts to develop different strategies and plans. For example, from the data above Afghanistan on aggregate has enough water, thus the focus should be more on utilizing this water more effectively rather than making more available. However, simply viewing water scarcity in terms of cubic meters of renewable water per capita can fall short due to its lack of capacity to take into account regional differences within a country. Based on the water basin data above several regions of Afghanistan is suffering from water stress and chronic water stress while in other regions there is adequate amount of water available. Further, this attempt at trying to understand water scarcity is limited because it does not adequately explain the causes of the water scarcity.

**A Broader Understanding of Water Scarcity**

A different approach to understanding water scarcity can be made by looking at the factors behind the water scarcity. Internationally there are four factors recognized as causing water scarcity: aridity and drought are seen as the permanent and temporary natural causes of water scarcity, and desertification and water shortage is seen as the permanent and temporary man-made causes of water scarcity.

<table>
<thead>
<tr>
<th>Time Scale</th>
<th>Natural Cause</th>
<th>Man-made Cause</th>
</tr>
</thead>
<tbody>
<tr>
<td>Permanent</td>
<td>Aridity</td>
<td>Desertification</td>
</tr>
<tr>
<td>Temporary</td>
<td>Drought</td>
<td>Water Shortage</td>
</tr>
</tbody>
</table>

\textsuperscript{15} UNESCO, 2002; Pereira, 2005
The different causes of water scarcity have different effects such as inciting migration, reducing the carrying capacity of the ecosystem and depleting groundwater levels. All of these factors have a negative effect on people’s livelihoods, increasing poverty, unemployment and intensifying desperation among the people. The breakdown of management systems also allows for antagonistic ‘grabbing’ of water resources by more powerful segments of society, creating and or increasing the experience of water scarcity and therein the negative effects it has on people’s livelihoods.

Drought as discussed below is important to understand due to its potential negative effect on the agricultural sector and on people’s livelihoods. Drought is a common occurrence in Afghanistan; however, after decades of war and destruction the vulnerability of the people to drought has increased; this is particularly true of the agricultural sector. Drought can thus have an encompassing negative effect on people’s livelihoods, causing or increasing poverty and creating unemployment.

Desertification in Afghanistan is caused by various factors such as deforestation, over-grazing and over-exploitation of local natural resources. It can also have various negative effects such as reducing the productive capacity of the ecosystem, enabling natural disasters such as floods and droughts that then frequently result in high levels of migration of people from one location to another, subsequently putting additional pressure on the local ecosystem of the receiving location. This can result in further desertification and thus a vicious self-reinforcing cycle.

One of the most important issues to understand is the experience of man-made water scarcity. The decades of war has had a negative effect on the infrastructure of the country and on its social organizations and management mechanisms. This has resulted in the breakdown of water management systems which enables the antagonistic seizing of water resources by more powerful segments of society. These actions further intensify the experience of water scarcity and create and/or increase the social divisions between different segments of society.

**Drought**

Afghanistan has been suffering from drought for at least a decade or so. It has become a serious issue which has had a negative effect on people’s livelihoods all over the country, particularly due to its negative effect on agriculture. In January 2010, the country had received low levels of rain and snowfall, allowing for predictions of a potential upcoming drought. This created a genuine fear of drought among the people.
The conditions of well-below normal levels of rainfall compounded by well-below normal levels of snowfall in 2007/8 created the worst drought conditions the country had seen for the last 10 years. The agricultural sector in Afghanistan is highly dependent on the level of snowfall in the mountains: around 86% of all irrigated land in Afghanistan derives its water from rivers and streams originating from the mountains. The vulnerability of agriculture to drought can be seen in the 55% reduction in the production of wheat and the 67% reduction in the production of barley following the 2007/8 drought.

USDA, 2008a
The situation was aggravated by disruptions in the regional grain trade, in the form of export bans and illegal taxation, increased conflict on major trade routes along the Pakistan border, and increases in global food prices. This resulted in a severe decline in the availability of wheat, causing a 200% increase in the retail price of wheat in most markets. During the same period the price of livestock decreased by 40%-70%, due to a combination of high wheat prices and lack of grazing land. Combining these factors, it was estimated that around 4.5 million people in Afghanistan required food aid to survive due to the drought.

The vulnerability of agriculture to drought makes serious drought a key cause of poverty in a predominantly agricultural society. The decline in agricultural productivity can create large amounts of unemployment and induce labor migration. In provinces like Faryab and Wardak, labor migration to Iran is considered a primarily drought-related coping strategy. It also should be noted that there is evidence that show that female-headed households are the most vulnerable to drought. Research from Helmand and Kandahar confirmed this theory in those provinces as their main income is provided by child labor and women begging for money.

**Desertification**

Environmental degradation such as desertification is one the main causes of natural disasters such as drought, floods, soil erosion and landslides. Afghanistan is highly vulnerable to desertification. Around three-quarters of the country is vulnerable to desertification which makes Afghanistan’s vulnerability to desertification among the highest in the world.

Poor people are most affected and most vulnerable to desertification (as they typically are with any other large-scale disaster). In some cases the link between environmental degradation and poorer Afghans can have a self-reinforcing effect. Desertification can cause internal migration through its role in influencing other natural disasters such as drought. Internal migration can in turn result in large numbers of people moving to other fragile environments in the country intensifying the demands and pressures on those places. Moreover such migration can also cause conflict with local people in the receiving areas into which the migration occurs due to the greater pressure on the local environment’s available resources.

The Afghan rangelands are particularly vulnerable to desertification; the widespread grazing taking place in these areas has resulted in a reduction of vegetation cover and has exposed the soils to increasingly higher levels of erosion. Over-grazing is a key contributing factor in causing desertification in Afghanistan; it causes arid lands to lose critical ground cover faster than it can rejuvenate.
Another major cause of desertification is deforestation. Around 2% (1.3 million ha) of the land area in Afghanistan is covered by forests\textsuperscript{32}. There has been significant reduction in the forest area of the country due to high demand for fuel wood, construction material and illegal logging\textsuperscript{33}. Timber represents a source of cash for warlords in the country\textsuperscript{34}. Between 1978 and 2002 the forested area in the eastern part of the country was reduced by 50\%\textsuperscript{35}.

Due to three decades of conflict and poverty, the wood provided has been a valuable resource for the people. It has functioned as a relatively cheaper alternative of fuel and heating and the selling of timber and fuel wood has been a source of income for people. However the forests have been over-exploited which has resulted in a process of deforestation. This has in turn created room for natural disasters such as drought and limited the productive capacity of the ecosystem, thus further exacerbating the scarcity of water in Afghanistan.
Water Shortage

Afghanistan also has a problem with the over-exploitation of the groundwater resources in the country. The Afghan Ministry of Energy and Water (MEW) estimated that around 50% of the countries’ water groundwater resources have been depleted in recent years\(^\text{36}\). The situation has been exacerbated by drought in recent years and lack of effective water management systems.

The effects of drought have limited the access to surface water around the country. More and more people have been forced to access water from groundwater resources. People accessing groundwater face varying challenges in different regions of the country. In rural areas such as Faryab, the groundwater levels are naturally low and thus are easily and rapidly depleted. In rural areas such as Wardak, economic factors make it difficult to even access groundwater. In other parts of the country, wells are being dug as a coping strategy in order to access water for household consumption and irrigation. The Ministry of Rural Rehabilitation and Development (MRRD) is included in the bodies involved this practice; it has tried to improve people’s access to water by digging more wells. Since 2001 they have built or are in the process of building over sixty-seven thousand wells.

<table>
<thead>
<tr>
<th>Completed and Ongoing Well Construction Since 2001</th>
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<tbody>
<tr>
<td><strong>Quantity</strong></td>
<td><strong>Budget USD</strong></td>
</tr>
<tr>
<td>Shallow Wells</td>
<td>64,111</td>
</tr>
<tr>
<td>Deep Wells</td>
<td>3,087</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>67,198</strong></td>
</tr>
</tbody>
</table>

However, the wells are not without their own dangers, particularly groundwater depletion. This is particularly a problem in Kabul, where the city is experiencing heavy groundwater depletion. Since 2002 the population of Kabul has increased from around 1.2 million to around 3.7 million in 2010\(^\text{37}\). Yet only about 20% of the population in Kabul has access to potable water, making groundwater the major source of drinking water and water for household consumption\(^\text{38}\). Since 2001, the MRRD has constructed or are in the process of constructing around 1,401 wells in Kabul. This phenomena of building more wells as a coping strategy for accessing water is not viable in the long term and moreover potentially harmful for the poorest segments of Kabul’s population. The overuse of wells causes a fall in groundwater levels, which requires the construction of even deeper well in order to access water. The poorer segments of the population are unlikely to be able to afford digging deep well water. Groundwater depletion can therefore create social divisions between those who can and those who cannot afford to dig deeper wells. It will also make it easier for the richer segments of society to monopolize control and usage of the vital resource.
“Rich Afghans often cope at the expense of poor Afghans. In order to alleviate the impact of water shortages, rich Afghans can afford to drill deep wells, which can have an adverse effect on Karezes, springs and shallow wells located within the vicinity of their deep wells. The main beneficiaries of shallow wells, springs and Karezes are ordinary Afghans who cannot afford the cost of boring deep wells.” (FEWS NET, 2005, np)

The above-mentioned definition of water shortage has to be expanded in order to give a deeper understanding of the man-made water shortage in Afghanistan. Afghanistan has been a country devastated by decades of war which has had negative impact on the infrastructure of the country and on the formal and informal legal and management systems. Logically the fighting itself would have had a negative impact on the country’s physical infrastructure, but it has also diminished the country’s capacity to maintain various other structures and systems that would typically serve as mitigation to the problem.

There is some information available on the degradation of the physical water infrastructure of the country. In Afghanistan around 60-70% of the Karez are not in use and around 85% of the shallow wells have dried out. Some of the main reasons for the breakdown of the Karezes and wells are the physical damage caused by war, the drought, and the construction of deep wells in the vicinity of Karezes and shallow wells. The construction of deep wells diminishes the productivity of Karezes and shallow wells and causes a further depletion of the underground reservoirs.

Breakdown of Management System as a Cause for Water Shortage

However, another effect of the ongoing conflict is the breakdown of the social water management system which has also influenced water availability and usage. Traditionally in Afghanistan surface water has been seen as common property. Traditional communities also see themselves as “fundamentally autonomous in matters of water management”. Through time, the Mirab system has been the response among communities around Afghanistan to the need for a cooperative water management system. The structure of the Mirab system varies from region to region but there are some commonalities among all of them:

- A Mirab is usually an individual appointed among the landowners by the landowners.
- They are usually elected in Shura gatherings
- They live in the area they manage
- They are usually from the tail end villages for the purpose of ensuring fair water distribution between the upstream and downstream users
- They are usually paid by the landowners in their management area

The Mirab system is community based which means that they are rooted in the community they serve. The Mirabs have knowledge about local water rights and they have the capacity to enforce these rights with the social pressures they command. The Mirabs have also enjoyed
government support in their attempts to enforce the rule of law. Most importantly they can and are held accountable to the people they serve.

“Enforcement is based on a symbiotic relationship between water-master and water users, with the real power lying with the ‘electoral college’ of water user stakeholders”. (Lee, 2007, p. 43)

All governance systems in Afghanistan have been affected by the social, political and economic impact of the conflicts over the last 30 years. Specifically for water management systems there have been changes in those who have taken up the position of the Mirab, the quality of management and ability to maintain well functioning irrigation systems have degraded, and the more complex irrigations systems that were once run by government officials have been taken over by local communities. Therefore you find cases where the Mirabs obtain and maintain their position via political, economic and intimidation. The Mirab system is becoming increasingly vulnerable to corruption; for example there is evidence of developing procedures of “bribes for water”.

Behavioural change during wartime is an important factor in the degradation of the Mirab system. These behavioural changes have destroyed societal norms and institutions, and led to the breakdown of traditional mechanisms of resource allocation, enabling individuals and groups to seize resources in hostile manners. These behavioural changes have undermined the Mirab system by undermining its local legitimacy and thus its capacity to enforce the rule of law by social pressure. The Mirab system has been further disadvantaged due to the weak state, which has not been able to provide enough support for the Mirab to enforce the rule of law.

The lack of capacity of the Mirab to enforce any rules has also meant a breakdown in traditional authority. The cultivation of rice in upstream communities has traditionally not been allowed. Rice requires much more water and would limit the water available in the downstream areas, thus upstream rice production is a source of communal conflict between upstream and downstream communities. Due to the breakdown of the capacity of the Mirab to enforce rules, there has been a spread of rice cultivation in upstream areas. Along the Ali Abad canal in Kunduz, this has resulted in significant reduction of the water available in the downstream areas. The breakdown in the capacity of the Mirab to enforce rules, such as not digging deep wells in the vicinity of a Karez, has meant that more environmentally sustainable options such as the Karez have been negatively affected. This has become a source of tension between different segments of local communities. This also means that the water is less fairly distributed, further intensifies the uneven access of water among people in Afghanistan. In other words, the breakdown in management systems further allows for a division between the haves and the have not, between those with and those without power, meaning the poorer and weaker segments of society are increasingly disadvantaged.
From Water Scarcity, to Livelihood to Conflict

In aggregate there is an adequate per capita amount of water in Afghanistan. However due to uneven division of water around the country and the fact that some areas are naturally arid, not everyone in the country has access to an adequate amount of water. Access to water has been further complicated due to persistent drought; and it has become an additional burden for people through its role in decreasing agricultural productivity and negatively affecting people’s livelihoods which results in increased poverty and unemployment. The war and resulting poverty in the country has produced large scale deforestation, further exacerbating natural disasters such as drought and reducing the productive capacity of the ecosystem.

Water shortage has also been exacerbated by human activity. The overuse and depletion of groundwater has created a dangerous cycle of digging deeper wells and further depleting the groundwater. This has particularly negative effects on the poorer segments of society as they are unable to afford digging deeper wells and thus having access to water further diminished. Afghanistan’s wars have also taken their toll on the water infrastructure of the country and caused a breakdown in water management system and by default impacted the traditional legal system. It has allowed certain segments of society such as upstream communities and more affluent Afghans to monopolize water resources which has worsened the man-made water scarcity for the weaker and poorer segments of society.

Water scarcity has a negative impact on people’s livelihoods. In a predominantly agricultural society, the decline of the availability of water will be a significant cause of poverty or be a root of further growth in poverty levels. People experiencing a decline in their ability to feed themselves and their families will naturally experience fear and desperation and becoming more vulnerable to different types of exploitation. The breakdown in social structures has also further enabled the seizing of natural resources such as water in a hostile manner. This is a process of primitive accumulation, centralizing resource access and power in certain segments of society and thus creating further divisions between people. In Ali Abad district of Kunduz province a local commander ensured that he was elected as the Mirab in order to capture access to water for his own lands. He also dried up the lands neighbouring his own, allowing him to buy these lands at below market prices. The uneven competition over water combined with the fear and desperation that water scarcity causes, lays a firm foundation on which conflict can arise and potentially develop violently. Research indicates this phenomenon is more likely to have a significant impact at the local level due to the fragmented and localized nature of Afghan society.

Water and Conflict

Water is a basic human necessity and an important resource in daily human life. It is also a key economic and vital livelihood resource, especially for people engaged in agriculture. Water

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1 CPAU Field Work, Kunduz, Feb 2010
scarcity can thus naturally be a source of conflict; however the importance of water on such a basic level makes water scarcity a likely cause of conflict primarily on a local level.

On an inter-state level there is potential for conflict between Afghanistan and its regional neighbors, including conflict between Pakistan and Iran in addition to conflict over the Amu Darya River between Afghanistan and the Central Asian countries. The potential for conflict will become more likely as Afghanistan’s usage and demand for the water increases, particularly along the Amu Darya. However the usage and demand for water is not likely to expand to the point where it creates water scarcity in the neighboring countries.

However the importance of water for basic livelihood strategies makes water scarcity a likely source of conflict on a local level within a country. Within states, competition over water use, its availability and allocation can lead to low-scale violence; this violence can escalate and cause instability within the country. In Afghanistan, the combination of water scarcity and the breakdown of traditional water management systems and rules make local conflict related to water highly likely. Studies carried out in Afghanistan show water to be among the top three causes of local conflicts.

### Water and Local Afghan Conflict

Although Afghanistan is facing potential conflicts with its neighbors, it is still more likely that within-country water related conflicts will be a greater problem. With Afghanistan water related conflict takes place on different levels and between different actors. There is a potential for conflict between provinces, districts and villages, especially when there is an upstream and downstream relationship. There is also potential for conflict between different actors such as industry and agriculture, pastoralists and agriculturalists, and upstream and downstream users. All the above mentioned potential conflicts can become a significant problem and challenge for the country.

A potential problem and a challenge are the social divisions and local fragmentation water related conflicts can potentially create. Afghanistan is already suffering from social divisions and local fragmentation; the country is divided along religious, political and most notably ethnic lines. Water scarcity and even water related conflicts by themselves do not create these divisions; however water scarcity and its potential resulting conflicts can create an animosity between people, and the negative livelihood effect will drive people into desperation. The animosity and desperation among the people makes them vulnerable to sociopolitical manipulation and exploitation. This vulnerability can potentially enable political entrepreneurs.
to take advantage of the situation and create social divisions and local fragmentation for their own personal interests.

Types of Local Afghan Conflicts

Between 2005 and 2008 Cooperation for Peace and Unity (CPAU) conducted conflict monitoring in Ghazni, Kabul, Badakhshan and Kunduz. The monitoring was carried out by local peace councils, 256 conflict incidents were reported of which 35 where over access to water which made it among the top three causes of local conflict from the researched areas. The monitoring also showed that water related conflicts were one of the major causes of family related conflicts and the single largest cause of communal conflict. Although CPAU’s conflict monitoring data provides a small sample it does however give a snapshot into the local realities of water related conflicts.

Among the conflicts over access to water in CPAU’s conflict monitoring, around 40% are intra-community, 31% inter-family, 23% inter-community and 6% intra-family. The main types of conflict are within communities and between families. This further indicates that water related conflicts have a negative effect on the social fabric of local Afghan communities. It also indicates that families’ internal conflicts over water are limited, thus emphasizing the importance of water conflicts at the communal level.

CPAU’s conflict monitoring also shows that the water related conflicts follow a seasonal cycle which is linked to the agricultural cycle. The majority of the water conflicts are concentrated around the period between March and May which is planting season. During this time additional water is needed for irrigation. There are also spikes in conflict during October, which coincide with the winter planting season, thus increasing the demand for water. Other spikes in water related conflict occur during the period between January and February. During this period a significant amount of time is needed for repairing and maintaining water systems, indicating that the breakdown of management and organizational systems and capacities might be a contributing factor to the elevated conflict levels.

Inter Community Conflict
In CPAU’s conflict monitoring research, access to irrigation water has proven the main cause of conflict between communities, followed by wanting benefits from the NSP program, and the construction of wells.

The irrigation sector is by far the largest consumer of water and as such it usually requires large support infrastructure in order to access enough water. These large infrastructures such as canals are likely to flow through more than one community. This means that several communities have to share water from the same source, naturally creating an upstream and downstream situation. Such a situation requires effective management structures and organization in order to fairly give access to the water. The breakdown of management systems and rules have allowed for uneven distribution of water between upstream and downstream users, and it has also allowed for practices such as growing rice in upstream communities, all leading to increased water scarcity, usually in the downstream areas.

The inter-community conflicts are concentrated around the period between March and May. This coincides with the planting season, thus further emphasizing the importance of access to irrigation water between communities. There is also a peak in January, a period were a lot of cleaning and maintaining needs to be done. Interestingly the upstream and downstream dilemma also creates an uneven distribution of labor towards the cleaning and maintain of the water infrastructure, thus creating another potential source of conflict between communities.

The breakdown of management systems and rules further exacerbates conflict due to lack of coordination and fair labor distribution schemes.

Intra-Community Conflict

In CPAU’s conflict monitoring, access to drinking water is the main cause of intra-community conflict followed by the construction and cleaning of streams, and dividing locally produced electricity.

In Afghanistan only 27% of the population has access to safe drinking water, which means that safe drinking water is a scarce resource in the country. The drying up of the majority of wells and Karezes around the country further limits access to drinking water; it also concentrates the availability of water around people/families who can, for example, afford to dig a deep well. This gives these people a certain amount of power which if exercised improperly can result in conflict. In the IDP camp in Qargha, Kabul, three water points have been established around the camp. These are filled three times every day by water tankers and are thought to supply the camp with sufficient water for household consumption. However the people located closest to the water points have claimed ownership of the water available and excluded others from accessing the water, creating conflict within the camp. This scenario follows the pattern of a man-made scarcity, based upon ill management and uneven distribution resulting in conflict over water.
Inter-Family Conflicts

According to CPAU’s conflict monitoring research, the issue of ownership is the main cause of inter-family water conflicts, followed by the construction and/or repair of wells and/or streams, and finally access to water for drinking and irrigation.

The breakdown of management systems has meant that there are no checks on claims to water resources. The years of war have also diminished the collective knowledge about local ownership and entitlements, thus creating room for conflict. In Sayyabad district of Wardak Province, there are conflicts over the Karez system specially focused around ownership issues. These conflicts originate from the diminished knowledge of what belongs to whom. As a result, there are no clear divisions of entitlement and obligations (such as contributing to the cleaning of Karez) that follow with owning access to water. In essence the breakdown of management systems and knowledge about entitlements on a local level creates room for dispute and potentially opportunities for more powerful actors to claim ownership of resources, without being checked by any other authority. These types of conflicts between families can be dangerous because they do not only have a negative effect on the social cohesion of the community and the relationship between families. It can also further the disparity between the rich and the poor, the powerful and the less powerful in communities, intensifying divisions.
Regional, National and Local Dimensions of Water Conflict

In order to build a deeper understanding of water related conflicts, we must understand the potential effects the different factors which, causing water scarcity have on different levels (regional, national, local). The matrix below gives a simplified synthesis of the potential effects of the different factors (on the left) at different levels. It is also a step in identifying potential ways forward in addressing the drivers of conflict, which is addressed in a later section.

Table 6 Dimensions of conflict

<table>
<thead>
<tr>
<th></th>
<th>Regional</th>
<th>National</th>
<th>Local</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1. Drought</strong></td>
<td>Less water will flow across the borders of Afghanistan such as through rivers in the Helmand river basin to Iran or through river in the Amu Darya river basin to the central Asian countries. This can result in increased tensions. Also attempts at home of conserving water or using more water can further increase the tension between neighboring states.</td>
<td>Will exaggerate upstream and downstream tensions between provinces. Reducing the agricultural productivity of the country, causing a reduction in employment opportunities, resulting in increased poverty.</td>
<td>Will exaggerate upstream and downstream tensions between or within different communities. Will have a negative effect on local livelihoods, will also increase competition over an increasingly scarce resource. This combination can create conflict and potentially lead to violence.</td>
</tr>
<tr>
<td><strong>3. Reduced caring capacity of the ecology</strong></td>
<td>Less water will flow across the borders of Afghanistan on more permanent basis, which can result in increased tensions more so than drought due to its permanent nature. Also attempts at home of conserving water or using more water can further increase the tension between neighboring states.</td>
<td>The ecosystem will become more vulnerable to human misuse, most likely resulting in increased deforestation and the consequences there after such as potential droughts and floods. It will also decrease the availability of water which can potentially result in increased competition which could end up in conflict. It will also reduce the agricultural production capacity of the country, having a negative effect on people’s livelihoods.</td>
<td>Will reduce the amount of water available which, increase the competition over water. This will most likely result in a scenario where the richer and more powerful segments of the local communities will monopolize access to water. In a scenario like this the poorer segments of the local communities will most likely migrate to urban centres for an alternative source of income.</td>
</tr>
<tr>
<td><strong>4. Groundwater depletion</strong></td>
<td>N/A</td>
<td>Will increase demand for the available surface water. This will require cross country cooperation and management of the countries river basins. It can potentially be difficult to manage the surface water on a large scale due to the topographically and politically divided nature of the country. This might also create tensions between upstream and</td>
<td>Will increase the social divisions in the communities. The wealthier segments of the communities will be able to afford to dig deeper wells while the poorer segments will not. If an alternative water source is not made available, then a power imbalance will be created in local communities where the wealthier segments of the communities will have</td>
</tr>
</tbody>
</table>


Security, Political, Economic and Social Dynamics of Water Conflict

In order to further our understanding of water related conflicts, we must identify the ways in which these factors impact on the security, political, economic and social dynamic. The matrix below gives a simplified synthesis of the potential effects of the different factors (on the left) on the different dynamics. This also provides a basis for beginning to prioritize what policy choices should be made, and at what level.
<table>
<thead>
<tr>
<th>capacity of the ecology</th>
<th>people’s livelihood. Increasing the incentive for joining armed groups, engaging in thievery and other illegal activities as a coping strategy.</th>
<th>severely reduce or completely deplete certain areas of their population. This can create conflicting interests between the political leaders of the migrants and those of the host communities.</th>
<th>production potentially of the country, reducing investments incentives and economic growth.</th>
<th>water on a local level potentially resulting in conflict. Might also force people to move causing a breakdown in local social organizations.</th>
</tr>
</thead>
<tbody>
<tr>
<td>4. Groundwater depletion</td>
<td>Can increase poverty and destroy people’s livelihood. Increasing the incentive for joining armed groups, engaging in thievery and other illegal activities as a coping strategy.</td>
<td>Can create tension and desperation among the people, especially among the poorer segments, creating room for political manipulation and exploitation.</td>
<td>The current response of digging more and deeper wells will have a negative long term economic impact as it is a unsustainable and inefficient use of scarce resources.</td>
<td>Will most likely further the power imbalance between the rich who can afford to dig deeper wells and the poor who cannot. Potentially further enabling exploitation and creating further social tensions, resulting in conflict and even in violence.</td>
</tr>
<tr>
<td>5. Breakdown of local water management systems.</td>
<td>This can allow for certain actors such as local warlords to set up their own management systems, most likely through intimidation, force and violence.</td>
<td>Various actors and groups might attempt to fill the void, creating political competition. Potentially unstable competition.</td>
<td>Will reduce the efficiency of the agricultural sector.</td>
<td>Powerful segments of society will get access to more (more than they would have) water. This can result in a man-made water scarcity for some, causing desperation, competition and most likely conflict. Social divisions are to be expected between groups such as rich and power and upstream and downstream communities.</td>
</tr>
</tbody>
</table>

Table 7 Dynamics of conflict
Regional, National and Local Implications and Ways Forward

At a regional level there is risk for increased tensions between states accessing water from the same water basin. Countries attempting to better utilize the water available, especially in times of natural water scarcity such as a period of drought, can create or further increase the experience of water scarcity, which can lead to conflict. This scenario can get aggravated by adding the upstream and downstream dilemma. Water related cross border migration, especially illegal migration, can support smuggling infrastructure which can be used to smuggle other illegal goods across borders such as drugs and weapons.

A way forward could be closer cooperation between states sharing water from the same water basin combined with long term vision and planning ahead. Attempts can also be made at increasing the availability of alternative livelihood opportunities within the state, thus diminishing the incentive for cross border labor migration.

At a national level there is risk for continued processes of migration and deforestation. The reduction of water available for various reasons will also have a negative impact on people’s livelihoods, increasing unemployment and poverty (due to the heavy reliance on agriculture). The unorganized and faltering condition of the country’s water management systems will make it difficult to coordinate and build structures of cooperation and ensure effective management of the available water resource. The very likely competition occurring over water will not have any effective channels to go through or be regulated by, thus creating room for conflict and hostile seizure of the water resources by more powerful segments of society.

A way a forward would be a diversification and development of the national economy, thus making people less vulnerable to the negative impacts of water scarcity. Great emphasis should also be put on attempts at rebuilding water management systems and linking them together on a national level.

At the local level there are processes of man-made water scarcity through breakdown of water managements systems, resulting in potentially harmful and uncontrolled competition over the water resources, combined with desperation at an individual level, resulting from impoverishment and reduced livelihood opportunities. The unchecked competition allows for antagonistic seizure of the water resources, favoring the upstream, rich and powerful segments of local communities; ultimately this potentially creates or enhances the experience of man-made water scarcity for the downstream and poor segments of local communities furthering the potential desperation. The combination of these two processes lays a firm foundation for the growth of water conflict.

The key step to a way forward would be to firmly re-establish and empower local water management systems, preventing uncontrolled competition and uneven distribution of water between the different segments of local communities. The development and diversification of the local economies would also reduce the negative effects of water scarcity.
Security, Political, Economic and Social Implications and Ways Forward

Processes leading to water scarcity and water scarcity can have a negative impact on the security situation. The primary influence generated by water scarcity on security is its role in the resulting poverty of the community dealing with the inadequate water supplies. This negative impact on the security situation is aggravated by increasing and uncontrolled competition over water resources. The security situation can also be aggravated due to the breakdown of local management system, which can allow local commanders or warlords to set up their own management systems, most likely through intimidation, force and violence.

The way forward would be to firmly reestablish and empower local water management systems, preventing an uncontrolled competition over water resources and filling gap, preventing commanders and warlords from taking advantage of the situation. However the most important way forward would be to fight the poverty through developing and diversifying the economy, offering people alternative livelihood options.

From a political perspective, processes leading to water scarcity and water scarcity itself can have a destabilizing impact on the political situation in a country and in a region. Water conserving measures in one country can increase the experience of water scarcity in another country, potentially destabilizing the political relations between them. The breakdown of a water management system can also create political incentives for various political entrepreneurs to fill the void. Various political incentives can also be created by the moving of constituencies resulting from migration, in both cases potentially resulting in an unhealthy and conflict prone political competition between various actors. The poverty and the potential social divisions resulting from water scarcity can also create opportunities for political entrepreneurs to manipulate and exploit the situation for their own personal benefits.

On a political regional level a way forward would be to build political structures of close cooperation around matters concerning water sharing. On a national and local political level a way forward would be to firmly reestablish and empower local water management systems, preventing an unhealthy and conflict prone competition. Fighting poverty would be a key strategy in making people less vulnerable to political manipulation and exploitation.

Water is an important component of Afghanistan’s economy due to its heavy dependence on agricultural activities and the high vulnerability of the agricultural sector to water scarcity. A reduction in the availability of water will cause a significant reduction in productivity in the agricultural sector. Such a development will cause an increase in unemployment, a reduction in income generating opportunities, and a reduction in investment incentives and abilities. The limited resources available are also ineffectively spent with short-term solution practices such as digging deep wells. The combination of these factors can potentially reduce the economic growth in the country.
A way forward would be to diversify the economy, which on a positive note is occurring slowly. New economic sectors need to be developed which can include more people and thus make people less dependent on the agricultural sector. Long term investment is needed in order to ensure sustainable and desired economic growth.

The overall social implications are negative, dangerous and conflict causing. The process of migration breaks up social structures and ties in communities and adds additional factors and strains on the social equilibrium in the host communities. The breakdown of management structures also allows for hostile seizure of water resources, favoring the rich and the powerful; inherently this creates social divisions, enhancing the experience of water scarcity and the negative effects it has on people’s livelihoods in the poorer and less powerful segments of local communities. Social fragmentation is a natural result of such developments.

A way forward would be to work at a local level to firmly reestablish and empower local management systems, preventing uncontrolled competition and uneven distribution of water between the different segments of local communities. This needs to be combined with sufficient overall economic growth at the local level, making alternative livelihoods opportunities available for a broader range of people.

Water Scarcity, Conflict and Human Development

As described earlier, water scarcity has a negative effect on people’s livelihoods. Water scarcity has the ability to drive people into or further into poverty, due to the heavy reliance on the agricultural sector. The combination of increased poverty and the various factors which create water scarcity, which can increase competition over and antagonistic grabbing of water resources, create social fragmentation, migration and diverging political interests, lays a solid foundation on which conflict can arise. These various factors and potential developments can have different effects on different segments of the society.

Effects on Children and Young People

Children, especially those coming from poor households, are one of the most vulnerable segments of society to issues related to water. If and when water scarcity leads to conflict which might then escalate into violent conflict, children will naturally be particular victims. They do not have access to the resources nor the understanding required to defend themselves and their rights. In many parts of Afghanistan, children have the primary task of fetching water. This task is a source of conflict between the children, often leading to violence between the children by the water points. The predominance of conflict over drinking water within communities also means that children are likely to end up in the middle of the conflict and become a primary victim to it. Fetching water can also cause physical damage to the children, as the water can be too heavy and the paths home steep and slippery. In parts of the country children are forced to engage in the labor force due to the bad economic situation of their households, which water
related issues such as drought can cause in a predominantly agricultural society. Child labor can be a form of violence against children causing physical and mental damage to the children.

Critically, children’s school attendance is limited because they are spending their time fetching water and/or working. These activities will have a negative effect on the society as a whole in the long run. Essentially it allows for yet another under-educated and most likely illiterate generation to grow up, wasting valuable potential human capital which is desperately needed for the development of this country.

**Gender Aspects of Water Scarcity**

It is difficult to build up an understanding of water related issues and the direct effect on women per se’ due to their sensitive status in Afghanistan especially in rural areas. However it is possible to try to understand the effect of water related issues on women, in the different roles women have in a society, such as being a mother or providing an income for the household.

In Afghanistan only 47% of the working age females participate in the labor force of which only 7% are engaged in waged employment in the non-agricultural sector, this is not a surprising fact given that only 12% of women aged 15 and older can read.$^{61}$ Women as providers are therefore heavily dependent on the agricultural sector for their income. Thus water scarcity can have a strong effect on the income generating capacity of women. Women’s vulnerability to a decline in agricultural activities is further aggravated due to the limited coping strategies available to women, due to their status and limitation in Afghan society. The availability of water is therefore a key resource in the economic opportunities available to and independence of women, which in itself is a key factor in their overall empowerment.

The uncontrolled and unchecked competition over and antagonistic grabbing of water resources puts women in yet another disadvantage as they frequently do not have the capacity to protect their rights and can easily become victims. Women are usually the main constituents of the poorer and powerless segments of society. Thus the breakdown of management systems, uneven distribution of water resources and the potential resulting social divisions will have a disproportionately negative impact on women.

**Lives and Livelihoods**

As mentioned earlier agriculture is the primary source of income for a clear majority of the people in Afghanistan. Agriculture is also the main vulnerable economic sector to water scarcity. 65% of irrigated land being left fallow and 37% of rain fed land being left fallow is due to lack of water.$^{62}$ The reduction in the availability of water and the resulting diminished agricultural productivity will have a negative impact on people’s livelihoods. The negative effect on agriculture goes beyond the direct impact on people’s livelihoods; it also reduces overall
export and trade, potentially resulting in less capital being available, diminishing investment capabilities and thus overall economic growth.

Issues such as unemployment and labor migration can become serious social and political issues. Water scarcity can lead to conflict and even violent conflict among communities if managed poorly. This will naturally have an overall negative effect on the communities. Migration caused by diminished livelihood opportunities due to causes such as drought, can literally empty entire villages. Labor migration also breaks up families and returning labor migrants from Iran (and other countries) have frequently been found to either be using drugs or involved in the drug trade.

The breakdown of management systems allows for hostile seizure of water resource resulting in an unfair distribution of water resources in the favor of the rich and powerful segments of society, creating or furthering divisions between different segments of society and allowing for fragmentation to occur exposing room for political manipulation and exploitation.
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